ISSUES OF CIVIL LIABILITY ARISING FROM THE USE OF EXPERT SYSTEMS

by

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PREFACE

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Karin Alheit
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When new circumstances arise we must adapt long-established principles to them, for the law is not so stereotyped and narrow that it cannot be extended and applied to new cases which arise out of the increasing and changing requirements and necessities of the times:

> *per* Kotzé CJ in *Houghton Estate Co v McHattie and Barrat* (1894) 1 Off Rep 92 104.

Computers are now a significant facet of modern society. As their capabilities advance from basic number crunching into extraordinarily sophisticated symbolic manipulation, an area heretofore the proprietary domain of human beings, we must adapt to the social, legal and ethical consequences. The changes in computer applications seen to date are minuscule compared to those soon to be realized:

> *per* Cole GS, Esq in *Tort Liability for Artificial Intelligence and Expert Systems,* CLJ Vol X 1990 127-231 129.

SUMMARY

Computers have become indispensable in all walks of life, causing people to rely increasingly on their accurate performance. Defective computer programs, the incorrect use of computer programs and the non-use of computer programs can cause serious damage. Expert systems are an application of artificial intelligence techniques whereby the human reasoning process is simulated in a computer system, enabling the system to act as a human expert when executing a task. Expert systems are used by professional users as an aid in reaching a decision and by non-professional users to solve a problem or to decide upon a specific course of action. As such they can be compared to a consumer product through which professional services are sold. The various parties that may possibly be held liable in the event of damage suffered by the use of expert systems are identified as consisting of two main groups, namely the producers and the users. Because of the frequent exemption of liability for any consequential loss in standard form computer contracts, the injured user may often have only a delictual action at her disposal. The fault-based delictual actions in SA law give inadequate protection to unsuspecting software users who incur personal and property damage through the use of defective expert systems since it is almost impossible for an unsophisticated injured party to prove the negligence of the software developer during the technical production process. For this reason it is recommended that software liability be grounded on strict liability in analogy to the European Directive on Liability for Defective Products. It is also pointed out that software standards and quality assurance procedures have a major role to play in the determination of the elements of wrongfulness and negligence in software liability and that the software industry should be accorded professional status to ensure a safe standard of computer programming.

Key terms:

Expert systems; artificial intelligence; software liability; computer malpractice; products liability; professional liability; software producers; professional user; software standards; information product.

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CHAPTER 1

SCOPE AND METHOD OF STUDY

1. Statement of the problem

1.1 Introduction

Automation in the form of computers has brought many benefits, but there are concomitant problems. One of them is the question of legal liability where damage is sustained when computers are used, misused or even not used. Computer-controlled processes have become almost indispensable in modern business and social life, causing people to rely increasingly on their accurate performance. As computer hardware[1] is incapable of performing any process on its own, the aspect of computer technology that has the greatest impact on people's lives is computer software.[2] Defective computer programs, the incorrect use of computer programs and even the non-use[3] of computer programs can cause serious damage. The

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1 This term refers to the physical components of a computer system, eg the personal computer itself. See appendix I for definitions of computer technology terms used in this study.

2 This term refers to a computer program which is a set of statements or instructions that tell the computer what to do. Although the term "software" is popularly used as a synonym for "computer program", it embodies more than that: In terms of the definition of the World Intellectual Property Organisation (WIPO) "software" may be a *computer program* (set of instructions capable of causing a machine having information-processing capabilities to indicate, perform or achieve a particular function, task or result), or a *program description* (underlying information determining the instructions to be incorporated in the program), or *supporting material* (documentation, user instructions, etc), or a set of several of these elements.

3 The term "non-use" refers to situations in which existing computer technology, which in some way benefits the task at hand, is not used during the execution of the task. The question then arises whether the person responsible may be held legally liable for damage incurred in such circumstances. See ch 2 par 10.2.4 *infra*.

following examples are taken from real-life incidents:

- a cancer patient is lethally injured after receiving an overdose of radiation therapy determined by a faulty computer program;[4]

- an aeroplane which is computer-controlled crashes possibly because of a fault in the computer system;[5]

- 93 000 barrels of crude oil are shipped to the wrong trader because a computer system fails to recognise human operator errors;[6] and

- in a New York civil case concerning economic loss caused by the alteration of airline tickets, the court held that the airline could have prevented the loss by maintaining a capable computer system.[7]

In the science fiction film epic *2001: A Space Odyssey*, **HAL**,[8] the spaceship computer, is capable of solving problems intelligently like a human expert and taking action independently of human programming and intervention. **HAL**'s reasoning

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4 See the case of patient *Cox* referred to by Stuurman and Vandenberghe 1988 *NJB* 1668.

5 In a newspaper article on the third crash within a year of an Airbus A-320 (the first passenger plane to be run by computers, using a "fly-by-wire" control system), bringing the total of deaths in these crashes to 270 people, aviation officials were quoted as suggesting that instead of a pilot error, a "computer software malfunction" was responsible for the crash: Staff reporter *Pretoria News* of 24 January 1992.

6 This incident illustrates the damage caused by the incorrect use of a computer program: see Staff reporter *Computerworld* of 30 March 1992.

7 *Swiss Air Transport Company v Benn* 467 NYS 2d 341, NY Civ Ct 1983. The facts of this case reflect the circumstances in which the non-use of a computer system may cause loss.

8 The name "HAL" was made up by substituting for each letter of IBM the preceding letter in the alphabet: see Turley 1988 *CLJ* 455.

ability is due to a deductive process[9] based on a compilation of data[10] which is continually expanded by its own conclusions and by additional input from outside sources. **HAL** is therefore continuously learning and increasing his existing knowledge, surpassing all humans because of his far greater "brain" capacity and perfect memory. **HAL** is, of course, the concrete manifestation, albeit fictional, of a specific branch of computer science known as "Artificial Intelligence" (AI) or quite simply - a machine that can *think*.[11]

Computer technology is advancing at such a phenomenal rate that the possibility of creating a HAL is fast becoming a reality. One of the means of achieving this is by building **expert systems** (ES's), a particular type of software which captures the basic knowledge that allows a human to act as an expert when dealing with complicated problems. The expert system (ES) is a collection of computer programs or software that solves problems in a specific field[12] of knowledge. It consists of a knowledge base and a reasoning mechanism, called the inference engine, which interacts with data given by the user, or with data acquired through its own functioning, to solve a problem in the domain.[13] The system works by applying deductive principles to the data contained in its knowledge base and is capable of functioning at the level or standard of the recognised experts in the domain. It is usually developed by a team of people who gain the relevant knowledge from

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9 This process is executed by an "inference engine": see ch 2 par 8.1.3 *infra*.

10 The data is embodied in a "knowledge base": see ch 2 par 8.1.2 *infra*.

11 See ch 2 par 2 *infra* on the issue of AI in general and the question whether it can ever be said that a machine is capable of thought. After the extraordinary chess-playing computer of IBM, **Deep Blue**, beat Garry Kasparov in June 1997, the question arises whether **Deep Blue** has a mind of its own: Gelernter *Time* of 19 May 1997 57. Gelernter *supra* 58 states that computers as we know them will never have minds, no matter what feats they perform. However sophisticated the computer performs, it will always be a performance.

12 The field of knowledge is also referred to as a **domain** of knowledge in ES terminology: see ch 2 par 8.2.1 *infra*.

13 See ch 2 par 2.2 *infra*.

consultation with the acknowledged human experts in the particular domain of the ES.[14]

ES's differ from other conventional computer programs in two fundamental ways: Firstly, ES's manipulate **knowledge** whereas ordinary programs manipulate **data**[15] and secondly, the knowledge base is separated from the inference mechanism.[16] Different types of expert systems are determined by the type of output of the system,[17] the particular application[18] of the system and the type of user for whom it was developed.[19] The following examples illustrate the three basic types of ES's currently in existence, and the type of legal problems arising from their use:

(1) The medical field is a tremendously fertile area for the development and use of ES's.[20] One of the earliest developed and best-known ES's is **MYCIN**[21], which diagnoses infectious diseases based on patient history and laboratory test results and then advises physicians on the appropriate antibiotic treatment. MYCIN is a prime example of the type of ES which is designed to be used by a professional person referred to as the "professional user", such as a doctor or an engineer, to assist them in the execution of their professional duties. This type of ES will henceforth be

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14 *Ibid.*

15 On the difference between knowledge and data see ch 2 par 9.1 *infra.*

16 See ch 2 par 5.1 *infra.*

17 A distinction is made between a **material output** and an **intelligent output**: see ch 2 par 10.1.2 *infra.*

18 See ch 2 par 4 *infra.*

19 See ch 2 par 8.2.6 *infra.*

20 See ch 2 par 4.2 *infra.*

21 MYCIN is in fact the first successful ES to be developed and is referred to as the ES - prototype in almost all AI literature: Waterman 34 *et seq.* See also ch 2 par 4.2 *infra.*

referred to as the **Intelligent Assistant**.

- What would the legal position be if a doctor relied on this system in diagnosing a patient's illness and the diagnosis turned out to be wrong due to a fault in the ES? Would the doctor be liable for the loss sustained by the patient or might action be instituted against the producers of the ES?

- What would the legal position be if the wrong diagnosis was due not to a fault in the ES, but to incorrect information supplied by the doctor? Apart from a possible malpractice suit against the doctor, would the producers of the ES also be held liable for the damage?

- What would the position be if the doctor neglected to use MYCIN in circumstances where such use could have prevented an injury sustained by the patient?

(2) ES's have also been developed to furnish advice on professional matters to lay members of the public.[22] Such systems are known as "professional kits" and may occur in any type of profession. For example, in the medical domain, ES's have been developed to provide a preliminary diagnosis of illnesses in the home.[23] The ES's function would be to evaluate a particular user's symptoms of illness and decide whether or not medical attention was needed. Such an ES will henceforth be referred to as a **Self-Help System**.

- What would the legal position be if the user suffers harm because of wrong advice information furnished by a defective ES? In this case there is no

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22 These members of the public are non-professional users.

23 This type of medical ES is also referred to as a "Doc-in-the-box": Willick 1986 *Rutgers C&TLJ* 26-29.

intervening professional user to turn to.

(3) The Airbus 320 is the first computerised aircraft that can land, take off and guide itself. It is the first passenger plane to be run almost entirely by computers with a "fly-by-wire" control system that was previously only used in military aircraft. The system can override the pilot's decisions in certain situations. It will, for example, not let the pilot perform a dangerous manoeuvre overreaching the safety limits of the aircraft which are programmed into the computers. The result is that the pilot's freedom of action, for instance in an emergency situation, is greatly reduced. Expert systems technology, amongst other sophisticated artificial intelligence applications, has been used to achieve this development.[24] In February 1990, an Indian Airbus crashed at Bangalore airport, killing ninety people; in June 1991, an Airbus crashed during a French airshow, killing three people; and in January 1992, an Airbus 320 crashed in the Vosges, France, killing one-hundred-and-seventy-seven people.[25]

- Investigations concluded that pilot error was responsible, but some aviation officials suggested a **computer malfunction**.[26] If this was indeed the case and assuming further that it was an ES malfunction, the question arises whether the user (pilot) or the producers are responsible for the loss sustained by the passengers. This type of ES will henceforth be referred to as an **ES Machine** and is embodied in a product. An ES Machine may be used by a professional user or a non-professional user.

The examples above illustrate the three basic types of ES's currently in existence and

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24 See Staff reporter *Sunday Star* of 26 January 1992 and Staff reporter *Pretoria News* of 24 January 1992.

25 *Ibid.*

26 *Ibid.*

which are respectively labelled the **Intelligent Advisor**, the **Self-Help System** and the **ES Machine** for purposes of this thesis.

ES's are thus a particular type of computer program which simulates human experts when addressing problems faced by people in the execution of a task.[27] ES's are used to perform complicated tasks that could previously only be performed by a limited number of highly trained human experts. An ES is applied in a specific domain of knowledge and can be used by **professional users** as **an aid** to reaching a decision (as in the case of the Intelligent Assistant), or by **non-professional users** to solve a problem and decide upon a specific course of action (as in the case of the Self-Help System), or by any user to have a task done which brings about a physical change in the environment (as in the case of an ES Machine applied in a robot). The first two types of ES's have an interactive nature[28] and an intellectual output,[29] whereas the third type of ES is usually not interactive and has a material output.[30]

ES's are applied in a wide variety of areas such as diagnosis, planning, forecasting, design, instruction and the giving of professional advice in such different spheres of knowledge as medicine, business, engineering, architecture and even law.[31] They are applied in various professions: ES's for financial, investment, medical, legal and tax advice have been developed and they are used in architectural design, aerospace

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27 My definition. See ch 2 par 3 *infra* for a comprehensive description of ES's.

28 An interactive nature describes the characteristic of an ES of reacting to input data from the user as for example in the case of MYCIN, *supra*. See also ch 2 par 8.2.6 *infra*.

29 An intellectual output is an output that does not effect a material change in the environment but has to be acted upon by the user: see ch 2 par 10.1.2 *infra*.

30 A material output brings about a direct change in the environment. See ch 2 par 10.1.2 *infra*.

31 Waterman 39.

engineering, industrial production and education.[32] It would therefore seem that the possibilities for future applications are virtually unlimited.

Just as a human expert may err in giving advice, an ES may fail to perform correctly, or give inaccurate or misleading advice resulting in loss caused by personal and/or economic injury. The question then arises as to who should be held liable for this loss? Where a human expert acts on his own, be it a natural or legal person, the identification of the liable party is obvious, but the nature of an ES results in a variety of parties who face possible liability arising from a variety of actions. The reasons for this are varied:

- the ES may embody the expertise of many human experts who may all be professionally liable,
- the separation of the knowledge base and inference engine lends a composite nature to the ES,[33]
- various interrelated legal relationships based in contract and delict may exist between the producers, users and injured third parties.[34]

In the case of a defective ES that causes harm, who will the liable party be? If, for example, the defect can be traced to an error in the knowledge base, it will then have

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32 Numerous examples of ES applications have been reported in the press: In Tennessee a prison ES determines the prison time of inmates: see Staff reporter *Sunday Star* of 23 August 1992; a marketing ES has been developed at the Wits Graduate School of Business: Grant *Computer Mail* of 25 August 1989; and various medical ES's consisting of drug dispensing systems, patient administration systems and interactive diagnostic systems are in use throughout the RSA: Bidoli *Computer Mail* of 26 June 1992. At UNISA an expert registration system is saving the University millions of rands in terms of training and overtime: see Staff reporter *UNISA News* of January 1993. See also appendix II for a list of application areas.

33 See ch 2 par 5.1 *infra*.

34 See ch 2 par 10.2 *infra*.

to be determined whether it is due to a mistake by the consulted expert or the computer scientist. The developers of an ES, namely the programmers or toolbuilders, the domain expert (DE), the knowledge engineer (KE) as well as the suppliers or distributors of ES's are collectively referred to as the **producers** of an ES.[35] The producers, together with the **users**, professional or non-professional, form the two main categories of parties under discussion.

Bad advice given by the system may cause loss in several ways: conduct undertaken in reliance on the advice by the user of the ES can amount to a delict vis-à-vis a third party, or to breach of contract by the user vis-à-vis a co-contractant. Moreover, such an occurrence can amount to a delict or breach of contract by the developer(s) or supplier of the ES vis-à-vis the user, or even to a delict vis-à-vis the third party affected by the user's conduct. Who can be held liable in the various instances and what is the basis of liability? Should the consulted DE or the programmers or the supplier or even the users of the system be sued for the various types of loss? In cases where the Intelligent Assistant type of ES can be used, the interesting question arises of whether the professional user should be held liable for the **non-use** of such an existing system.

Legal issues regarding the use, misuse and non-use of ES's constitute a new application of the law of delict and contract which has not yet been addressed in South African law. However, as ES's are used more and more often, these issues will have to be clarified. The producers of ES's usually have no control over the use of the ES's they have produced once these have been mass-distributed and even when they build a system for a particular person or organisation in terms of a development contract, there is no authority over the use thereof outside contractual terms, except in terms of copyright legislation.[36] If someone sustains physical or

35 See ch 2 par 8.2 *infra*.

36 The Copyright Act 98 of 1978 as amended by the Copyright Amendment Act 125 of 1992: see ch 4 par 5 *infra*.

economic injury as a result of the defective functioning or use of a product that contains an ES, or of incorrect advice or information supplied by an ES as a result of a system defect or incorrect conclusions, he or she could conceivably sue all of the parties involved in its production, distribution and use.[37]

1.2 The research question

The problem with which this study concerns itself can be divided into three parts:

(1) The **identification of all parties** who could possibly be held civilly liable in South African law when the use of an ES causes loss to some person or institution;

(2) The **determination of the various contractual and delictual causes of action** for the institution of claims for damages arising from such use; and

(3) A full discussion of the various forms of **delictual liability** arising from the use of an ES.[38]

1.3 Need for the study

The use of computers in the real world has increased phenomenally and as the dependence of people in all walks of life on their use has become firmly established, so the need for an understanding of the legal problems surrounding their use has also increased. The subject of computers and law actually embodies a two-way relationship whereby computers are being used to support legal practice and research on the one hand, and, on the other hand, cognisance must be taken of the legal

37 See ch 3 *infra*.

38 A detailed discussion of contractual liabilities does not form part of this thesis: see par 1.4.2 *infra* and the reasons stated there.

problems that are caused by their use. In this regard, Van der Merwe[39] prefers to use Marcel Storme's[40] distinction between *rechtsinformatica* and *informaticarecht*, where the first concept refers to the use of computers by lawyers and the second one to the legal effects of the use of computers in society.

Ideally there should be a part of South African law called "computer law" which deals with those principles of law that govern the use of computer technology and proposes solutions to common problems even though such an area of law actually covers a wide range of well-trodden subjects. In this study in particular, well-known principles of the law of contract and the law of delict are applied to a novel situation.

Computer and information technology have invaded all aspects of modern life. Hardly a business or institution exists today that does not make use of some form of computer-technology and very few homes, at least in affluent societies, are without a personal computer. Although ever-increasing automation has many benefits, it is also a process which can cause great harm because of computer programming errors as well as the incorrect use of such programs. In order to deal with these problems, it is necessary for legal development to keep abreast of new developments in high technology. ES's especially have a great potential as the subject of litigation, on the one hand because of their complex nature,[41] and on the other hand because of their application in areas such as safety-related products and the rendering of professional services.[42]

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39 At vii-iv.

40 Cited in Vandenberghe G *Informatica und Recht* series 1 as quoted by Van der Merwe at vii.

41 See par 1.1 *supra*.

42 As the information age progresses and the electronic world enlarges it is becoming apparent that sophisticated application software such as ES's is changing traditional relationships and the ways in which they function. A pertinent example is the relationship that exists between a professional and her client: see ch 2 par 11 *infra*.

Although the appearance of expert computer programs known as ES's is not at all new to the field of computer science, it is a definite newcomer to the law in terms of legal liability for computer use. One of the reasons for this may be that whereas ES's have previously only been developed as part of research programs, they have now reached the stage of being available on the commercial market where their potential for causing loss or harm, and thus of leading to litigation, has much increased. That this potential has been realised by other Western countries can be seen from the fair amount of academic writing on the legal issues involved.[43] Although there are many ES's in operation in various areas of commerce, industry and the professions in South Africa,[44] there has as yet not been any mention of the legal issues involved when damage is caused by their use.

1.4 Scope and limitations of the study

This study comprises an enquiry into civil liability issues arising from the use of ES's, defined and limited in the following respects:

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43 The spurt of academic discussion, especially in common law countries, has been brought on mainly by the necessity of classifying an ES as either a **product** or a **service** because of the very different consequences in legal liability: a product is usually governed by **strict liability** principles in terms of product liability and a service by **liability based on fault** which involves principles of negligence: see Zeide and Liebowitz 1987 *IEEE Expert* 19; Reed 1987 *CL&P* 12; Gill 1986 *HTLJ* 483; Turley 1988 *CLJ* 455; Cole 1990 *CLJ* 127; Tuthill 1991 *AI Expert* 45.

44 During a conference on "Technical applications of expert systems" held in Johannesburg on 25 and 26 June 1991 by the CSIR, it became apparent that expert system technology in the field of the **engineering industry** is already being used extensively in the areas of diagnostics and repair, production decisions, safety acts and regulations, troubleshooting, equipment selection and design and problem recognition. According to the engineers, the main advantage of ES's in the fiercely competitive industrial environment is the saving of development time and costs together with the ability to assist in making split second decisions precisely and without the time-consuming need to consult with all the experts who are not always available: CSIR 1.

1.4.1 Use of expert systems

The use of an ES refers to the use of a defective ES, the incorrect use of a sound ES and the non-use of an existing ES. A defective ES is an ES that contains an error or a fault which originates either from faulty design or development in any part(s) of the ES, or from improper execution in a part(s) of the ES.[45] Execution errors that arise from faulty input or unjustified reliance by the user on the information supplied by the ES, constitute the incorrect use of an ES, and the non-use of an ES refers to the situation where an existing ES is not used.[46] ES's are categorized into three types of ES's namely the Intelligent Assistant, the Self-Help System and the ES Machine.[47]

1.4.2 Civil liability

The discussion of civil liability is limited to contractual and delictual liability. Liability incurred through the infringement of immaterial property rights and through the application of the doctrine of estoppel is excluded from this discussion because of the particular description of the manner in which liability is incurred when ES's are used, namely through the use of a defective ES, the incorrect use of an ES or the non-use of an available system.[48] The main objective is therefore to recompense an injured party for damage suffered because of a **fault** in the ES or the **faulty use** of an ES.

The discussion of contractual liability is further limited to a discussion of only those aspects which are necessary to determine the cause of action for the institution of claims for damages in circumstances where a contractual nexus exists between the

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45 See ch 2 par 9.2.2 *infra*.

46 *Ibid*.

47 Par 1.1 *supra*.

48 Par 1.4.1 *supra*.

parties concerned. A comprehensive discussion of contractual liability with comparisons from other legal systems is not undertaken. However, the discussion of delictual liabilities is treated in detail after a comparative study of relevant principles applied in other countries has been made. The contention is that the producers' contractual liability for breach of contract arising from defective software and the incorrect use or non-use of such software, will be excluded in most software contracts[49] leaving the injured party with only a delictual action. In many cases there will also be no contract between the developer of the ES and the user or the injured party, either because no contract was entered into or because it was not validly concluded.[50]

The discussion of delictual liability is limited to the causing of harm through **negligent conduct** in regard to the creation of a defective ES, the incorrect use or non-use of such a system. Delictual liability arising from fraudulent behaviour or misrepresentation and other kinds of conduct intended to induce the conclusion of a contract are not addressed. Although it is possible to cause damage by the intentional use, misuse or nonuse of ES's, it is unlikely that such practices will occur among legitimate producers and users of ES software.

2. Method of research

The type of research must be appropriate to solving the problem statement.[51] Traditionally there are two methods in legal research: the historical method and the comparative method.[52] Comparative law denotes the process of comparing rules of law from different legal systems, usually with a certain purpose in mind because

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49 The relevant software contracts may consist of acquisition and licensing agreements: see ch 3 par 2 *infra*.

50 See ch 3 par 2 *infra*.

51 Venter *et al* 219.

52 Venter *et al* 220.

"comparison for comparison's sake is likely to be barren".[53] Van Zyl[54] sees comparative law as (a method comprising of) *"die vergelyking uit sowel histories as kontemporêre oogpunt gesien, van vreemde regstelsels en hulle regsinstellings oftewel regsbeginsels met mekaar."* According to Hahlo and Kahn[55] the comparative study of different legal systems is especially rewarding if done with one or more of the following objects in mind:

- producing effective local legislation;
- helping to find solutions to problems on which there is no authority in our law;
- assisting in the understanding of legal transactions involving foreign law; and
- contributing to the uniformity of principles in the world's legal systems.

The comparative law approach has been chosen for this study for the following reasons:

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53 Hahlo and Kahn 111. Gutteridge 7 distinguishes between **descriptive comparative law,** which is a comparison for the sole purpose of obtaining information regarding foreign law; and **applied comparative law**, which is a comparison with a definite aim in view. Zweigert and Kötz(1) 2 define "comparative law" as the comparison of different legal systems of the world. They distinguish between **macrocomparison** which is the comparison of the spirit and style, and the methods of thought and procedures of different legal systems; and **microcomparison** which denotes the comparison of specific legal institutions or rules used to solve particular problems. In terms of this distinction, the comparative law study undertaken here amounts to microcomparison as the object is to compare the ways in which different legal systems solve the problem of ES liability: see ch 5 *infra*.

54 At 5.

55 At 111.

(a) The absence of material and authority in South African law on the subject-matter of this study makes a comparative study of the experience of other legal systems in this regard absolutely necessary.[56]

(b) Computers and the law applicable to them are *par excellence* a field of law that stands to gain from the comparative method. South African consumers are trying their best to keep abreast of new technological developments in this fast-moving field, and are struggling to cope with corresponding legal problems, whereas their overseas counterparts have already appeared in court because of the dire consequences of using faulty software.

(c) As most computer software is received from overseas distributers, knowledge of the relevant foreign law is necessary to understand the rights and duties of the various parties involved.

(d) The historical method is inappropriate as computers and their applications are a recent development.

3. Outline of thesis

Chapter 2 describes the characteristics, structure and purpose of an ES. This information is necessary for an understanding of the specific nature of ES's which lies at the root of various issues concerning civil liability arising from their use. The three basic types of ES's that occur today are described and distinguished, and the persons involved in their production and use, as well as the various legal relationships that may exist among them, are identified.

Chapter 3 contains a discussion of the underlying basis of the different types of civil

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56 Van der Merwe vii - viii also chooses the comparative law method mainly because of the dearth of material available on computer law in South Africa.

liability involved when ES's are used. The general principles in terms of which the law imposes contractual and delictual liability are outlined with the aim of identifying causes of action when damage is incurred through the use of ES's.

Chapter 4 contains a discussion of various related topics that may be relevant to a discussion of ES liability such as the concurrence of claims, choice of law, arbitration and alternative dispute resolution methods, the possible influence of a bill of rights on the contractual and delictual liabilities that may arise when ES's are used, as well as a discussion of some aspects of copyright law with regard to computer programs.

Chapter 5 consists of a comparative law inquiry into the delictual liabilities arising from the use of ES's and comprises three parts. In part I the delictual liability principles applicable in the common law countries, namely the United States of America and the United Kingdom are discussed, in part II the effect of European Union law on ES liability is investigated and in part III the application of the delictual principles to ES liability are treated with regard to two continental countries, namely Germany and the Netherlands.

Chapter 6 contains an exposition of delictual liability arising from the use of ES's according to South African legal principles. In chapter 7 a summary and critical evaluation of the previous discussions are given, some conclusions are drawn and some recommendations are made.

CHAPTER 2

EXPERT SYSTEMS

1. Introduction

In this chapter the various parties that may possibly be held liable in the event of damage suffered through the use of ES's are identified. In order to achieve such identification, it is necessary to refer to the characteristics, application and structure of ES's. From these elements the specific nature of ES's is determined, which in turn indicates the various persons involved in the production and use of ES's as well as the different legal relationships which may exist between these persons. It is further submitted that the discussion of the above-mentioned elements points to only three types of ES's basically being used in the world today.[1] These types are illustrated by way of three hypothetical examples which will be used throughout this study to demonstrate the legal liabilities that may be incurred through the use of ES's defined as the use of a defective ES, the incorrect use of a sound ES, and the non-use of an existing ES.[2]

The development of ES's is a component of the study of artificial intelligence (AI) which forms a part of **computer science**.[3] Von Wright[4] in his inaugural address to the third conference on "Logic, Informatics, and Law" states that AI is a branch of "cognitive science" which is an interdisciplinary enterprise connecting logic, linguistics, neurophysiology and psychology with computer science and technology. The

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1 Namely the Intelligent Advisor, the Self-Help System and the ES Machine: see ch 1 par 1.1 *supra*.

2 See par 9 *infra*.

3 Waterman 3; Susskind 8; Franken *et al* 399. See appendix I for a definition of basic expert system terminology.

4 Martino(1) 1.

development of computer and information[5] technology has had a revolutionary impact on "the work of the mind" resulting in the emergence of the current "information society"[6] as opposed to previous technological discoveries which were concerned with "the work of the muscles of men and their domestic animals" and resulted in the "industrial revolution".[7]

2. Artificial intelligence

2.1 General

AI is a term that provokes a lot of discussion in many disciplines. Philosophers, psychologists and scientists have always puzzled over the nature of intelligence[8] and the idea of creating "artificial intelligence" which can be built into a machine. The advent of computers has brought an exciting stimulus to the mystery of "machine

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5 Because information is central to computers, in that the primary function of computer technology is to develop faster and better ways to interact and work with information, the term "information technology" is frequently used in place of "computer technology". This has also occurred with regard to the designation of "Computer and information technology law". *Cf* Geldenhuys 68-74 who gives a detailed exposition of the various terms used interchangeably when in fact, "Computer technology law" is only one aspect of "Information technology law". According to Geldenhuys 70, the reason for the confusing use of terminology may be found in the fact that the same legal problems experienced with computers are also experienced in other areas of technology and information, and it is therefore convenient to treat these problems under the same topic.

6 The term "information society" was first used by Alvin Toffler in his bestsellers *Future Schock* and *The Third Wave*. It refers to the post-industrial society in which information has become the most valuable commodity in a world which increasingly resembles a global village where everybody is in electronic communication with each other.

7 Martino(1) *ibid*.

8 Because the term "intelligence" is easier to recognise than to define, it is not strange to find as many definitions of AI as there are scientists.

intelligence".[9] The goal of AI scientists is to design, develop and implement computer programs that can perform tasks and solve problems of a type for which human intelligence is required, that is programs that can in some sense **think**.[10] These programs are then called "intelligent systems" of which ES's are a subset. The dividing line between intelligent and non-intelligent systems of course keeps shifting as computers and their software become more sophisticated, ensuring that the concept of AI remains a moving target.[11] August[12] states that the development of AI has reached the stage where the type of robots in existence are of such a complex and sophisticated nature that their status as objects in American law should be that can be programmed to perform some task of manipulation or control, existing tort law can sufficiently deal with injuries that result from their use, misuse or abuse since they are mere objects[13] for which some human will be responsible, but once the

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9 **The invention of the computer is regarded as one of mankind's most advanced achievements in that it is the closest representation of artificially reproduced human thought.**

> Although as a matter of history the concept of non-humans exhibiting uniquely human attributes has existed in legend and artifact, not until the development of the digital computer in the 1950's did scientific researchers begin to think seriously about artificial intelligence.

per Nycum and Fong, *Artificial intelligence and certain resulting legal issues* quoted by Friedman and Siegal 1988 *Rutgers C&TLJ* 289 fn 2.

10 The core AI question is the still ongoing debate as to whether it can ever be said that a machine can "think": Waterman 3-5; Susskind 7-11; Rolston 15-21; Franken *et al* 400-404.

11 Scientists expect that future development in the field of AI will lie in the development of new hardware architecture rather than in the further development of software, in the hope of achieving computers with **inherent intelligence** as opposed to **programmed intelligence**: Rolston 1; Miller 1984 *NZLJ* 85.

12 1988 *CLJ* 375.

13 August 1988 *CLJ* 379 cites the following definition of "robot" according to *The robot institute of America*:

robots are considered as entities on their own, the possibility arises of holding them independently legally liable for damage caused by them.[14] August expands on the interesting notion of developing a "body of robot law"[15] applicable to "robot-humans" (manufactured equivalents of humans).[16] However, the state-of-the-art in AI does not point to the probability of granting independent legal status to AI systems in the near future.[17]

> A robot is a reprogrammable multifunctional manipulator designed to move materials, parts, tools or specialized devices, through variable programmed motions for the performance of a variety of tasks.

14 August 1988 *CLJ* 385 argues that once it is established that robot-humans can exist, logic, ethics and open-minded morality dictate that they are given equal rights with humans because to discriminate against them on the basis of the "softness" or "hardness" of their body parts is just as unreasonable as discriminatory treatment on the basis of skin colour. *Contra* Cole 1990 *CLJ* 153-154 who is of the opinion that in the near future, AI will not be granted legal status either as an independent or even a semi-independent entity as the technical problems in creating truly independent AI (in the sense that it is capable of learning, growth, change, consciousness and self-consciousness) are still insurmountable. However, once AI has overcome these problems, the possibility of according some legal status to such entities is acknowledged: Cole 1990 *CLJ* 153 fn 92.

15 A *Corpus iuris roboticum* which describes the status and problems for robots as of "mid-MCMLXXXV".

16 Although the possibility of programming machines to learn and use judgement is acknowledged by most writers, the general consensus is that it is impossible to construct a genuine *emotional brain* in an artifact. Robots therefore lack religious feelings, conscience and morality which, theoretically, means that they will be unable to make value judgements, a situation that can be potentially harmful to humans. Robots must therefore be subjugated to regulation, viz the *Corpus iuris roboticum*: August 1988 *CLJ* 380-382. See also Gelernter *Time* of 19 May 1997 57 who notes that the idea of **Deep Blue** the victorious chess-playing computer, having a mind is absurd: "How can an object that wants nothing, fears nothing, enjoys nothing, needs nothing and cares about nothing have a mind?" It can win at chess but not because it wants to, it plays the game because it is designed for that purpose.

17 Cole 1990 *CLJ* 153-154.

Susskind[18] is of the opinion that the term "artificial intelligence" should be taken to connote a *prima facie* intelligence only, in the sense that those computer systems which perform tasks and solve problems that would indicate intelligence if they were performed by humans, exhibit artificial intelligence.[19] Rolston[20] avoids the controversial issues regarding the nature of true intelligence and whether a machine can think by defining AI as the "computer-based solution of complex problems through the application of processes that are analogous to the human reasoning process." Gelernter[21] concludes that although the development of a computer such as **Deep Blue** is an amazing technological achievement, signifying an intellectual milestone, its chief meaning is that human beings are champion machine builders. Activities that humans thought could only be done by minds, can be done by machines too if the machine builders are clever enough.[22]

In general AI can be defined as the discipline concerned with understanding and emulating in machines the processes and mechanisms that underlie human thinking,

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18 At 8.

19 A well-known procedure for evaluating the success of an AI system is the **Turing** test in which a human interrogator communicates with the AI system as well as another human without being aware of which responses originate from the computer and which from the human. This test was developed by A Turing, a well-known AI scientist: *Cf* Rolston 20. The AI system passes the test successfully if the interrogator cannot differentiate between the human and the computer. Rolston *supra* is of the opinion that an ES can still be of great value even though it fails the test. According to him an AI system that would pass a true Turing test doesn't yet exist. *Contra* August 1988 *CLJ* 385 who quotes various scientists that are of the opinion that it should not be impossible to design a machine that can think like a human, the real difficulty lies in designing machines that are able to display emotions. In conclusion it seems that the question whether a robot is a machine or artificially created life can only be answered by taking a decision and not making a discovery.

20 At 15.

21 *Time* of 19 May 1997 57.

22 Gelernter *Time* of 19 May 1997 57.

perception, reasoning, understanding and decision making.[23]

2.2 Expert systems

ES's are an application of AI techniques attempting to capture the basic knowledge enabling a human to act as an **expert**[24] when dealing with a problem.[25] This is done by simulating the human reasoning process in a computer system (the ES), through applying specific **knowledge** and making **inferences**.

Paul Johnson,[26] a scientist who has studied the behaviour of experts, describes an expert as follows:

> An expert is a person who, because of training and experience, is able to do things the rest of us cannot; experts are not only proficient but smooth and efficient in the actions they take. Experts know a great many things and have tricks and caveats for applying what they know to problems and tasks; they are also good at ploughing through irrelevant information in order to get at basic issues, and they are good at recognizing problems they face as instances of types with which they are familiar.

The process of building ES's involves the transferring of **domain knowledge**, that is knowledge about a specified area or **domain**, from a human expert, called the **domain expert** (**DE**), to a computer program. This process is known as **knowledge**

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23 The field of AI actually represents a large body of concepts and techniques developed by researchers since the 1960's and includes, *inter alia*, such interesting topics as: natural language processing; speech understanding; game playing; and robotics. For purposes of this study, the concept of AI is only discussed as a general background to ES's. On AI in general, see Susskind 8-11; Waterman 3-6; Franken *et al* 404-410.

24 *The Oxford advanced learner's dictionary* describes an expert as a "person with special knowledge, skill or training": Hornby *et al* 299. Theoretically an ES could even be more skilled than "an expert" as it could embody the knowledge of all the experts in a specific area.

25 Waterman 5; Susskind 9; Franken *et al* 417.

26 Quoted by Waterman at 5.

engineering.[27] The expert-system builder is called the **knowledge engineer** (**KE**) and it is his job to extract the knowledge from the DE and to build it into the ES. An ES can, of course, be modelled on the knowledge and experience of more than one expert; it is one of the distinct advantages of ES's that they are able to have **all** the experts' opinions available at once. The heart of an ES is the **knowledge base** which has the function of storing expert domain knowledge (usually in the form of rules) and from which such knowledge is then retrieved, or from which new knowledge is inferred when required.[28] The program containing general knowledge and procedures by means of which the most effective use of the domain knowledge can be made is contained in the **inference engine**.[29] These are the two basic structures of an ES.[30]

ES's are **knowledge-based systems** (KBS's) containing specific knowledge about some problem area and thus being expert in that domain. KBS's are systems containing knowledge that is used in problem-solving and reasoning and the term is generally used as a synonym for ES's although, as Susskind points out, there are KBS's that do not simulate experts.[31]

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27 Waterman 9; Susskind 10; Franken *et al* 426.

28 See par 8.1.2 *infra*.

29 See par 8.1.3 *infra*.

30 Waterman 18; Susskind 9; Franken *et al* 418. On ES structure in general, see also Tapper 262-263; Reed(1) 71-72; Cole 1990 *CLJ* 130-146; König 100-101.

31 Susskind 9 strongly objects to the synonymous use of ES's and KBS's because KBS's exist that, although also dependent on knowledge, do not require a particular human expertise, eg a system that recognises speech or images. He is of the opinion that only those KBS's containing a "depth and richness of knowledge", causing them to perform at the level of an expert in a "highly specialised domain", ought to be called ES's. Rolston 13 also mentions the "general" application of the term "expert system" to systems that, although they are knowledge based, only perform a subset of an expert's task. Because there are as yet few existing systems that can completely replace a human expert in a complex domain, he accepts this general use of the term. It is submitted that Susskind is quite correct in so far as his first argument is concerned, but in my view it is unnecessary to place such emphasis on the concept of "expert" and

3. Characteristics of expert systems

AI scientists and researchers require the following basic characteristics to be present in a system before it can be defined as an ES:[32]

3.1 Expertise

The ES must achieve the same level of performance as the human expert in the particular area of knowledge.[33] This means that the system must be skilful, in other words it must be able to apply its knowledge efficiently and effectively in order to produce a solution using the same shortcuts humans use in eliminating unnecessary calculations.

3.2 Symbolic reasoning

Problems are solved by using symbols to represent the problem concepts and then applying various strategies to manipulate these concepts. The system must, therefore, be able to manipulate symbols rather than perform standard mathematical computations.

3.3 Depth

An ES must have depth; in other words it must be able to operate effectively in a narrow domain containing difficult, challenging problems. In my opinion this

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"expertise". I am quite willing to accept that any KBS that **simulates human experts** in a domain is an ES provided its structure in general conforms to that of a basic ES as explained in par 8 *infra*.

32 Waterman 25-29; Tapper 262-263; Franken *et al* 410-417.

33 When MYCIN, the medical ES described in ch 1 para 1.1 *supra* is used, it achieves higher accuracy than medical students, interns or practising physicians and is on a par with experts in the field: Gill 1986 *HTLJ* 488.

requirement is not a necessity for a system to qualify as an ES; a system solving a less challenging problem, for example how to complete an insurance form, may also be an ES provided the other requirements are met.[34]

3.4 Self-knowledge

A true ES has the apparent ability to reason about its own operation because it has "knowledge" **about** its knowledge. This knowledge can be used to check the accuracy and consistency of its conclusions and can justify and explain its reasoning.[35] This is a very important and useful characteristic of an ES for the following reasons:

- Users have more confidence in the system.
- The system is easier to debug.
- Underlying assumptions are explicit (for this reason it is said that ES's are **transparent**).[36]
- Changes in the system are easier to predict and test.

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34 The adjudicating of problems as "difficult" or "challenging" is, in my opinion, of much too subjective a nature to qualify as a general characteristic of an ES.

35 For example, in the case of MYCIN the program is able to show the steps it followed to reach a conclusion: see par 4.2 *infra*.

36 See par 5.1 *infra*.

4. Expert system applications

4.1 General

ES's can be categorized in terms of the basic activities of an ES and according to the areas or domains of knowledge in which it solves problems.[37] ES's are also distinguished by the type of output[38] they produce and by the manner in which they are acquired.[39] Appendix II contains a list of selected ES's, illustrating their application areas according to the areas of knowledge in which they solve problems. The list shows only some of the ES's found in the most active areas in this field, namely chemistry, computer systems, electronics, engineering, geology, medicine, the military and the law.[40] Of these areas the medical domain has produced more ES's than any other problem area.[41] Medical ES's (MES's) are designed for professional use[42] as well as in-home use,[43] and as such they are good examples of the first

37 Waterman 32-48.

38 According to the functional distinction in software, ES's with an intellectual output provide information and perform tasks to the benefit of a user, and ES's with a material output perform tasks that bring about physical and material changes in the environment: see par 10.1.2 *infra*.

39 According to the commercial distinction in software, ES's acquired as a mass-marketed package is distinguished from bespoke software which is usually acquired via a development contract: see par 10.1.1 *infra*.

40 This list is adapted from the list appearing in Waterman 40-45, figure 5. The other domains in which existing ES's are applied are agriculture, information management, manufacturing, mathematics, meteorology, physics, process control and space control. *Cf* Waterman 40 *et seq*. For an extensive bibliography of current ES's and their applications, see Hunt and Quinlan.

41 *Cf* Waterman 40 *et seq*; Gill 1986 *HTLJ* 487-489.

42 In such a case the ES is designed for use by a professional user: see par 4.2 *infra*.

43 In such a case the ES is designed to be used by a non-professional user: see par 4.2 *infra*.

and second types of ES's identified in this study.[44] It is therefore inevitable that many of the rules peculiar to the medical profession will be alluded to during the discussion of legal liability.[45] The application of legal ES's (LES's) also deserves special mention. Firstly it involves the domain of law which is familiar to me (and most of the readers) and as such it is an example of *rechtsinformatica*,[46] whereas the topic of this study forms part of *informaticarecht*,[47] illustrating the two-way relationship between computers and the law. Secondly, like MES's, it may also embody the first and second types of ES's identified in this study.[48]

4.2 Medical expert systems

Since their inception, ES's have found a niche in the medical domain.[49] An example of a medical expert system (MES) is MYCIN, one of the first successful ES's developed.[50] MYCIN is designed to enhance the doctor's own skill and reasoning by way of a consultation process in which the system requires patient history and laboratory test results from the attending doctor. As such MYCIN resorts under the first type of ES's categorised in this study, namely the **Intelligent Assistant.**[51] The system then produces a probable diagnosis and a possible plan of treatment. The

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44 The Intelligent Assistant and the Self-Help System: see ch 1 par 1.1 *supra*.

45 Chapters 4 and 5 *infra*.

46 *Rechtsinformatica* refers to lawyers' use of computers: see ch 1 par 1.3 *supra*.

47 *Informaticarecht* refers to the legal effects of computers in society: see ch 1 par 1.3 *supra*.

48 Ch 1 par 1.1 *supra*.

49 According to Waterman 40 *et seq* one of the reasons why ES's burgeon in this area may be due to the explosion of information experienced in the medical domain.

50 MYCIN was originally developed as part of the Ph D thesis of EH Shortliffe from the Computer Science Department, Stanford University, USA: Gill 1986 *HTLJ* 487.

51 See ch 1 par 1.1 *supra*.

knowledge base contains close to 500 rules, dealing with blood infections and meningitis infections. The reasoning mechanism consists of a chain of rules that establishes the presence of an infecting organism from the acquired test data and patient history.[52] The program is able to explain its reasoning by answering various questions during or after consultation, such as "Why are you asking for this information?" and "How was a conclusion reached?" MYCIN states the conclusion as a measure of uncertainty based on a continuum from 0.1 to 1.0, where 1.0 is a certainty, 0.9 is strong evidence and 0.5 points to suggestive evidence.[53] The doctor who uses MYCIN during a consultation has the advantage of the opinion of acknowledged experts in bacterial diseases. Although ES's such as MYCIN can be useful, it is accepted that they do have limitations and cannot entirely replace physicians in the identification and treatment of health problems. The treatment prescribed by this type of system is limited by the individual nature of medical cases and it must be kept in mind that a system can only apply the principles which were incorporated into it by the developers. If a patient's symptoms are unique the ES will not be able to answer the user's query.[54] It is also of critical importance that a medical ES be constantly updated to keep up with the state of the art in the field of medicine.

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52 The following is a sample piece of the knowledge rules embedded in MYCIN:

IF:
1) the infection that requires therapy is meningitis, and
2) the type of the infection is fungal, and
3) organisms were not seen on the stain of the culture, and
4) the patient is not a compromised host, and
5) the patient has been to an area that is endemic for coccidioidomycosis, and
6) the race of the patient is one of: black asian indian, and
7) the cryptococcal antigen in the cfs was not positive
THEN:
there is suggestive evidence that cryptoccus is not one of the organisms that may be causing the infection.

53 Gill 1986 *HTLJ* 488.

54 The one main point of criticism against ES's is the hitherto inability of knowledge engineers to include **common sense** or **heuristic knowledge** in the knowledge system: see par 5.2 *infra*.

It is also possible to acquire medical ES's designed for in-home use, in other words a system that is used by a lay-person without the aid of a physician.[55] Such systems are categorised in this study as a **Self-Help System** which is used without the intervention of a professional user.[56] These systems are able to classify common ailments successfully and to serve as a supplement to a regular health care program.[57] They usually also contain a warning to the user that a doctor should also be consulted. However, it is very possible that the diagnosis and treatment from such a match-the-symptom medical program can be regarded as the unauthorised practice of medicine.[58]

4.3 Legal expert systems

The domain of law has during the past decade become a popular target for the development of ES's.[59] **Legal expert systems** (LES's) are rekindling debate on such questions of the theory and philosophy of law as: how does one define a legal rule?; how does a lawyer reason?; etc. LES's should be able to simulate the reasoning of a legal expert who draws conclusions from norms or who extracts general rules from precedents.[60] Theoretically all the knowledge of a legal expert can become part of a LES, but in reality practical problems are experienced with representing knowledge so as to make it understandable for machine processing.[61]

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55 Gill 1986 *HTLJ* 488.

56 See ch 1 par 1.1 *supra*.

57 Gill 1986 *HTLJ* 488.

58 Willick 1986 *Rutgers C&TLJ* 28. With regard to legal self-help software, it has also been noted that the use thereof may constitute the unauthorised practice of law: Vincenti 1988 *CLJ* 186.

59 Waterman 224; Tapper 262; Susskind 11-33; Tyree 1-15; Schild 13-33; Whitby(2) 6; Vivant 15-28; Martino(2) 183.

60 Martino(2) 184.

61 *Ibid.*

These problems include the use of natural language and the technical language used by jurists, legal knowledge representation and rules of derivation to obtain valid consequences from a set of norms.[62] Legal knowledge representation is one of the most difficult tasks in the structuring of an LES because it cannot be formalised in a very strict and simple way due to the "vagueness and open-texturedness"[63] of legal concepts.[64]

4.4 Basic activities of expert systems

Although ES's have been built to solve many different types of problems, the following categories comprising the basic activities of ES's are distinguished:[65]

4.4.1 Interpretation

These ES's infer situation descriptions from sensor data, for example interpreting gauge readings in a chemical process plant to infer the status of the process.

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62 *Ibid.*

63 A word is **vague** when it does not have a clear and definite set of necessary and sufficient conditions that apply to it eg a term such as "reasonableness" or "fair". A word is **open textured** when its definition lends itself to different applications eg a general classifying term such as "vehicle". Thus, a user of an ES concerned with regulations pertaining to the use of a "vehicle" would be faced with a classification problem when dealing with a youngster on a skateboard. *Cf* Susskind 187 *et seq.*

64 Susskind 186 is of the opinion that the problem of vagueness and open-texturedness can be greatly reduced by using more accurate law-statements and law-derivations in the knowledge representation. The **doctrine of open texture and vagueness** was first introduced to legal theory by HLA Hart in *Positivism and the Separation of Law and Morals* (Oxford) 1958 63 and further expounded in *The Concept of Law* (Oxford) 1961 121-132, cited by Susskind at 187.

65 It must be noted that many ES's perform more than just one of these basic activities, for example an ES that **diagnoses** often also **debugs** (a term that is used to describe the process of removing errors from a computer program) and an ES that **plans** may also **design**. *Cf* Waterman 39.

4.4.2 Prediction

These ES's infer the likely consequences of given situations, for example estimating the global oil demand from the current geo-political world situation.

4.4.3 Diagnosis

These ES's infer causes of system malfunctions from observables, for example locating faults in electrical circuits.

4.4.4 Design

These ES's develop configurations of objects under certain constraints, for example gene-cloning and designing integrated circuit layouts.

4.4.5 Planning

These ES's decide on a certain course of action before proceeding to act, for example an ES that creates a plan for applying a series of chemical reactions to groups of atoms in order to synthesize a complex organic compound.

4.4.6 Monitoring

These ES's compare actual system behaviour to expected behaviour, for example assisting patients in an intensive care unit (ICU) by analysing data from the ICU monitoring equipment.

4.4.7 Debugging

These ES's prescribe remedies for malfunctions, for example selecting the type of maintenance needed to correct faulty telephone cables.

4.4.8 Repair

These ES's execute plans to administer prescribed remedies, for example tuning a mass spectrometer, an instrument that measures voltage.

4.4.9 Instruction

These ES's are used to diagnose, debug and "repair" student behaviour. Instruction systems develop a model of the student's knowledge and the way in which that knowledge is applied to solve problems. They then analyse the model to diagnose any student deficiencies and "debug" or rectify those deficiencies by devising plans to correct them. The student behaviour is then "repaired" by executing these plans through direct interaction with the student.

4.4.10 Control

These ES's are used to govern overall system behaviour, for example an ES that manages the manufacturing and distribution of computer systems.

5. Differences between expert systems and conventional computer programs

5.1 Separation of knowledge base and inference engine

The main difference between ES's and other conventional programs is the separation of the **knowledge base** in which the knowledge about the problem domain is organised from the **inference engine** which contains general problem-solving knowledge.[66] Conventional programs do not possess knowledge bases and

66 See in general on the differences between ES's and conventional programmes, Susskind 4-16; Waterman 24-31.

inference engines as they manipulate **data**[67] as opposed to **knowledge** - they have **databases** encompassing the relevant data and the algorithms needed to work with them. In an ES there is a clear separation of general expert knowledge about the problem area and information about the current problem (as contained in the knowledge base) from the methods used to **apply** the knowledge to the problem (via the inference engine). The result of this partitioning is that the program can easily be modified by simply changing or adding rules to the knowledge base, thus making it **flexible** so that the program is able to explain its own behaviour by describing the rules it is applying, thereby making it **transparent**. A conventional program does not have this ability because the data and logical procedures are interrelated, making it difficult to change the program and impossible to attain transparency.

An ES also has the ability to infer new knowledge from existing knowledge and is potentially able to teach itself.[68] This possibility is derived from the characteristic of **self-knowledge** contained in an ES that enables it to look at the reasoning process used in its own operation.[69] The expectation is that this will in future enable ES's to reason from first principles, thereby creating the rationale behind their reasoning process. Theoretically they should then be able to appraise and change their own internal structure.[70]

It is precisely from this partitioning and interaction between the knowledge base and the inference engine that most legal difficulties arise in the case of a fault in the ES that causes harm. The problem is to determine where the responsibility and legal liability should lie, as the fault could have been caused by a defect in either of the

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67 Data is a statement of fact: see par 9.1 *infra*.

68 This process is still very much in a conceptual state and the subject of much AI research, as the ability to learn points to a heightened form of "machine intelligence". *Cf* Rolston 10 *et seq*.

69 This characteristic is displayed in the explanation facility: see par 8.1.5 *infra*.

70 Waterman 29.

abovementioned components, or as a result of their interaction, making it difficult to pinpoint its origin. The inference engine may be incorporated in an ES shell[71] which was designed and marketed by one person, while the knowledge base may have been produced by a different person, whereas the combined system may have been developed and marketed by a software house.[72] The situation becomes even more complicated where teams of people are involved, leading to an abundance of potential defendants.

Added to the problem of multiple potential defendants is the further difficulty of establishing which of these defendants caused the malfunction, especially in a situation where the defendants themselves are more knowledgeable about the origin of the malfunction than the plaintiff. Each of the defendants will be able to suggest ways in which the other defendants could be responsible for the defective output.

5.2 Heuristic methods

The presence of heuristics makes ES's more powerful and flexible than traditional

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71 An ES shell is a computer program containing an inference engine without any knowledge which enables the ES producer to add her own knowledge to build a finished ES: see par 8.1.3 *infra*.

72 The problem of allocating responsibility is further compounded by the likelihood that the shell works correctly when the rules are phrased and ordered in the right way, and the knowledge base is also adequate if the knowledge it contains is manipulated in the right way but the two are not properly matched. In such a case it will be extremely difficult to decide who is responsible for resulting errors: Reed(1) 73-74. The difficulty is aptly illustrated by the following example from Reed(1) 74:

> A specialist's expertise is collected and expressed - say in heuristics - by the knowledge engineer, whereupon the findings are presented to a programmer for coding the system. But did the specialist agree to the heuristics? And was the translation of heuristics to code 100% accurate? How well did the expert express his expertise? Is the knowledge engineer, as a non-expert in the domain, in a position to judge?

software. Heuristics are rules of thumb or hunches that limit the search for solutions.[73] Heuristic rules are approximate and generally consist of rules that have been gathered by experts through years of experience.

Conventional programs use **algorithms**[74] to manipulate data in order to produce computer-based solutions. This is called the traditional dataprocessing (DP) area which has to do with the manipulation of data in data bases, files, records, etcetera. It is a repetitive process definable from A to Z. Conventional systems are therefore **linear** in that they flow from a predetermined input through a process to output and they include spreadsheet, financial and word-processing applications. By contrast, the procedure followed by ES's is not predictable from one step to the next because of (1) the fact that ES's manipulate **knowledge**[75] which is a much broader concept than **data**,[76] and necessitates unique rules of representation[77]; and (2) the **heuristic** methods that are applied in order to find the solutions which cause the **system itself** to search each step as it proceeds on the way to its goal. The ES uses many more branches and nonlinear approaches to reach its output.[78] ES's are "journey-oriented" whereby user input clarifies facts that are matched with heuristic knowledge-generated rules, as opposed to conventional systems which are "destination-oriented" and whereby user input supplies the data to process an answer.[79] Furthermore an algorithm always produces the correct or **optimal solution** whereas a heuristic can only produce an **acceptable solution**. This

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73 Waterman 22; Rolston 5; Franken *et al* 403.

74 An algorithm is a formal procedure guaranteed to produce correct or optimal solutions: Waterman 22.

75 See par 9.1 *infra*.

76 *Ibid*.

77 Representation refers to the way in which the knowledge is built into the system: see par 8.1.2 *infra*.

78 Tuthill 1991 *AI Expert* 48.

79 *Ibid*.

becomes clearer if one looks at Waterman's[80] illustration of the difference between algorithmic and heuristic methods used to prevent the skyjacking of commercial airliners (figure 1).

The algorithm presented here is a repetitive process definable from start to finish (everything and every person boarding the plane is searched in the same way); and will produce an **optimal solution** (no-one will go on board with a weapon) in achieving the goal of preventing skyjackings. The heuristic method cannot be predetermined as it would first have to specify certain passengers (those that set off the metal detector or match the skyjacker profile) before proceeding to the prescribed search. In this way the system has to search itself for the next step. It would, however, be highly impractical to use the algorithm because of the time and cost involved, not to mention the unpopularity of such a method with the passengers. In contrast the heuristic method, although it cannot guarantee that a weapon will not slip on board, will produce an **acceptable solution** that is easier and more practical to implement.

This capability of ES's to deal with **real-world problems**[81] in a way that reflects human judgement and intuition is clearly distinct from more traditional computer systems, making ES's at once more advantageous and more dangerous to use. They are advantageous, because the systems can do so much more on their own; dangerous for the very same reason in that they can be relied on too much, causing

80 At 17.

81 A real world problem is a complex, practical problem with a useful solution. Computer scientists also make use of **toy problems** in developing programs but they have been found unsuitable for ES's because they tend to be unrealistic and oversimplified. A toy problem is an artificial problem eg a game or unrealistic adaptation of a complex problem: Waterman 27.

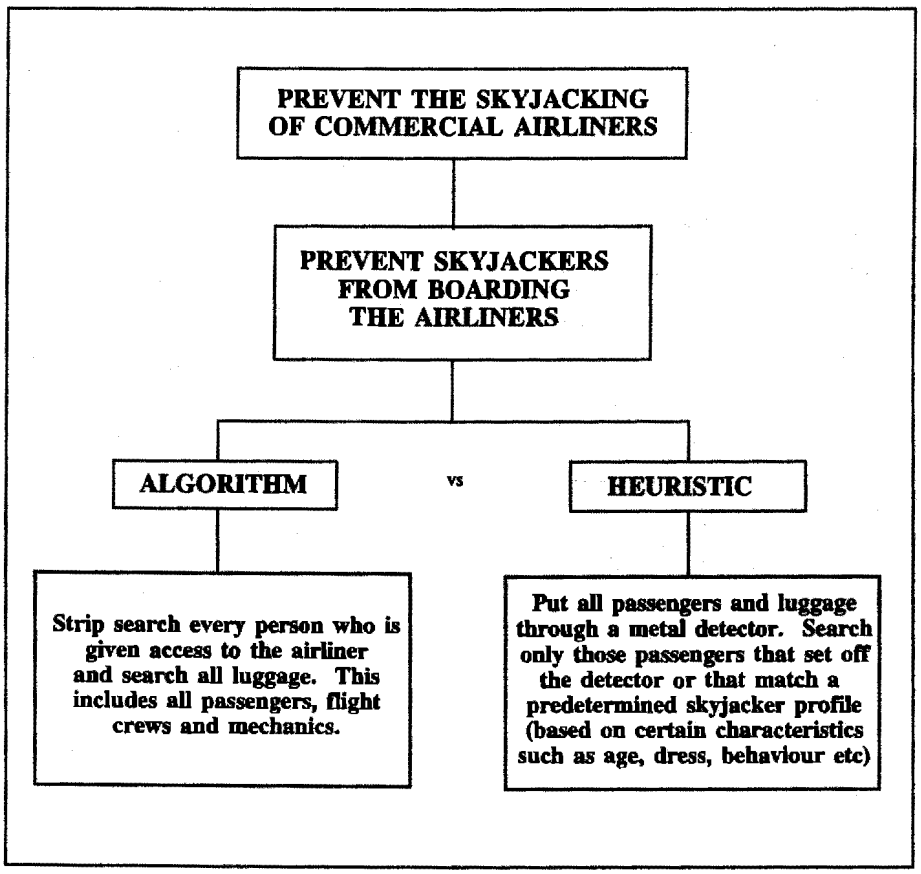

FIGURE 1 : ALGORITHMIC vs HEURISTIC METHODS

damage or injury if something goes wrong.[82] As mentioned in the previous paragraph, the further dilemma then arises as to who will be legally liable if something does go wrong because, in contrast to a conventional system, there are many more people involved in the production and use of ES's.[83]

6. Advantages of expert systems

The question may be asked why people are developing ES's rather than relying on human expertise as in the past. The answer is that there are several distinct advantages in using artificial expertise instead of human expertise:[84]

- Artificial expertise in the form of ES's is permanent whereas a human expert must constantly practise to remain proficient in some problem area.

- Artificial expertise can easily be transferred or reproduced simply by copying a program or file. Education, which is the transferring of knowledge from one human to another, is a lengthy, time-consuming and expensive process.

- Artificial expertise is easier to document because it is already represented in some or other form in the system.

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82 As probably occurred in the case of the Airbus 320 mentioned in ch 1 par 1.1 *supra*, where the pilot relied completely on the "fly-by-wire" system. See also Specht *et al* 1991 *JJ* 256 who point out the risk involved in the overreliance on ES's that fail to perform at an appropriate level of expertise in the auditing profession. They conclude that the only material increase in the risk of legal liability of an auditor user would be if he negligently relies on the ES and "real" human expert judgement is ignored because the system is in place.

83 Tapper 262-264; Reed(1) 71-72; Turley 1988 *CLJ* 471; Zeide and Liebowitz 1987 *IEEE Expert* 21.

84 Waterman 12-15.

- Artificial expertise produces more consistent results as it is not susceptible to distractions. A human expert may make different decisions in identical situations because of emotional factors.

- Human expertise is much more expensive than an ES. Although ES's are costly to develop they are cheap to operate and copies of the system can easily be made.

7. Disadvantages of expert systems

The current state of the art in the development of AI shows human expertise to be clearly superior to artificial expertise in the following ways:[85]

- Human expertise is more creative and innovative than the smartest computer program.

- Humans are adaptive and can adjust to new situations whereas a program needs to learn new concepts or rules.

- Human experts can make direct use of their sensory experience namely visual, auditory, tactile and olfactory. For ES's this sensory data must be transformed into symbols before it can be understood by the system and at this stage of development some of the information is lost during the process.

- Human experts have a broad focus on all aspects of a problem in relation to the central issue; ES's tend to have only a narrow focus on the problem itself, ignoring side-issues which are also relevant.

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85 Waterman 14-15.

- The biggest disadvantage of ES's compared to human experts is the one major drawback of artificial intelligence in general in comparison to human intelligence, and that is the absence of **commonsense knowledge**.

Commonsense knowledge is a broad spectrum of general knowledge about the world and how it works. This is a huge amount of knowledge which is possessed by all human experts and non-experts alike; and includes knowing what you don't know as well as what you do know. For example, a human who is asked to give the telephone number of Father Christmas would know immediately that such a number doesn't exist, but an ES would waste valuable time searching through its data and rules to find a solution. There is unfortunately no easy way to build this enormous quantity of commonsense knowledge involved in everyday problem-solving into a specialist system like an ES, but new developments are taking place rapidly and commonsense knowledge representation is a top priority.[86]

Because of the abovementioned disadvantages ES's are mostly used in an advisory capacity as an aid to an expert or novice user in some problem area. As these shortcomings do not reflect a fundamental limitation of AI, but only the current state of the art, the status of ES's in future may change dramatically and some human professionals may even become extinct![87]

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86 Waterman 14.

87 According to Katsh 28 the novelty of computers and the fast developing realm of "cyberspace" (the space one enters when communicating electronically via computer networks) is not really the speed and expertise with which tasks are performed, but rather the removal of constraints of space and distance, resulting in the formation of new relationships between people and information. An example is the availability of professional services via the computer instead of from a consultation with a doctor or lawyer etc, as is the case when a Self-Help System is used: see ch 1 para 1.1 *supra*. See also Kupfer 1987 *Fortune* of 12 October 47 where it is alleged that companies are using ES's to help them do everything from "approving loans to hunting enemy submarines".

8. Structure of expert systems

8.1 Architecture

Although ES architecture varies according to the specific ES application, the following general components (as shown in figure 2) are common to all systems.[88]

8.1.1 User interface

The user interface acts as the medium through which the user communicates with the system and vice versa. This facility should ideally consist of a **natural-language processor** that accepts and returns information in essentially the same form as a human expert. Although natural-language dialogue is not yet completely capable, current systems show good results.[89]

8.1.2 Knowledge base

The powerful **corpus of knowledge** that is built into the ES is the heart of an ES. This knowledge is stored in the knowledge base in the form of facts, rules and heuristics. It has already been mentioned[90] that the process of acquiring and representing this knowledge in an ES is called **knowledge engineering** and that it is done by the **KE**. Apart from the knowledge obtained from the domain expert, the system may also contain expertise from other sources such as books, journals, etcetera. The extraction of knowledge from the human expert is referred to as

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88 On the architecture of ES's in general, see Layton 2-19; Rolston 6-14; Waterman 16-23; Franken *et al* 418-422; Susskind 11-16.

89 The development of natural language processing is very topical among AI scientists, and even more so among ES developers as communications should be as natural as possible because the system is after all meant to substitute a human.

90 Par 2.2 *supra*.

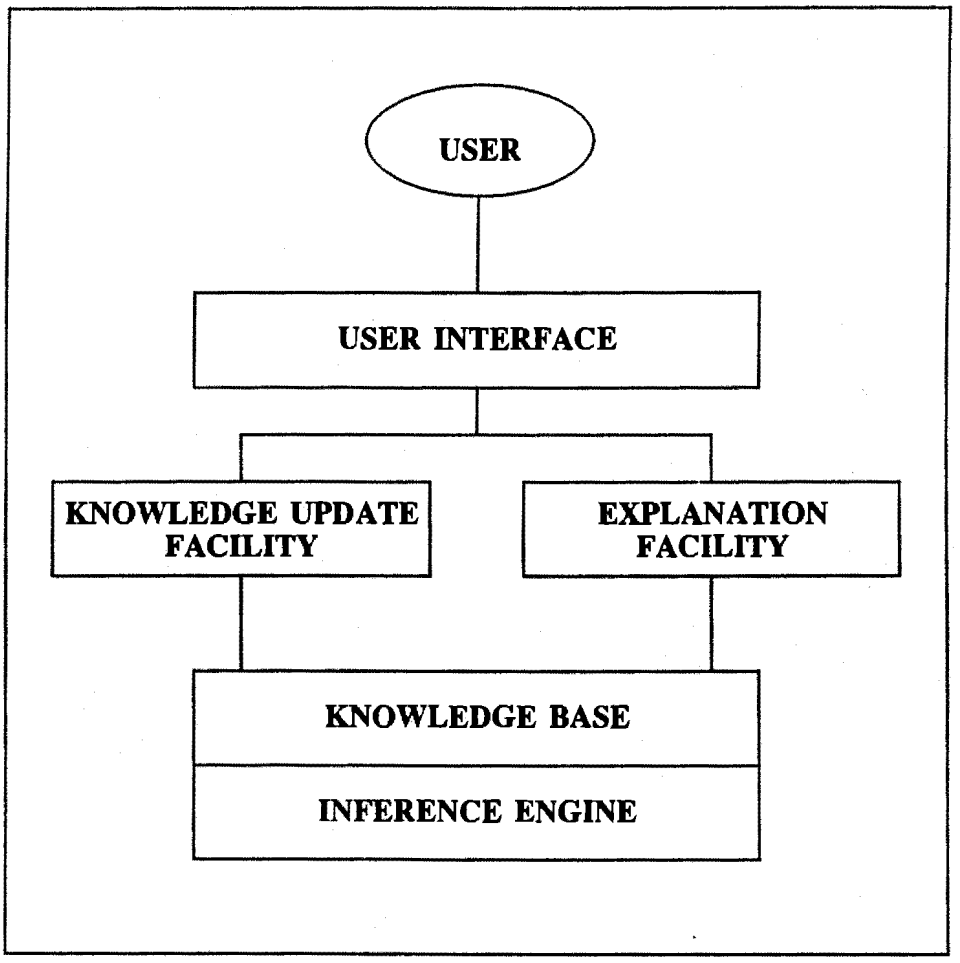

FIGURE 2 : TYPICAL ES ARCHITECTURE

knowledge acquisition[91] and the way in which this knowledge is stored or organised is referred to as **knowledge representation.**[92] The work pertaining to the inference procedures, that is the methods of reasoning, which are going to be used by the ES during problem-solving, is termed **knowledge utilisation**.[93]

Knowledge representation is done by adopting various techniques, any of which can be used alone or in combination with others. The most widely used methods of representation are:

8.1.2.1 Production rules

A rule consists of a statement of the form "if something is true, then something else is true". These are called IF (set of condition) THEN (set of action) statements, IF ... THEN rules for short. An example of such a rule is the following:

IF 1 - **The patient's infection is primary-bacteraemia**
and 2 - **The site is one of the sterile sites**
THEN **There is evidence that the category is enterobacteriaceae**[94]

Rule-based knowledge representation[95] is by far the most popular system as it is reasonably easy to code because it is based on formal logic which provides a natural way to describe processes in a changing environment.

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91 Susskind 9; Franken *et al* 426.

92 Susskind 10; Franken *et al* 430.

93 Susskind 10.

94 A rule taken from *MYCIN*, the medical ES that diagnoses and treats bacterial infections, discussed in par 4.2 *supra*.

95 Such ES's are also referred to as "rule-based systems": Waterman 20; Franken *et al* 434.

Layton[96] criticises the overuse of rules as this differs from the human thought process.[97]

8.1.2.2 Semantic nets

This method is based on a network structure, graphically depicting relationships between elements in a domain.[98] This is done by connecting points (**nodes**) with links (**arcs**) that describe the relationships between the nodes. Common types of arcs that are used for representing these hierarchies are **is-a** and **part-of** (see figure 3).

8.1.2.3 Frames

A frame is a data-structure consisting of a series of **slots** representing concepts or situations.[99] Each slot represents a typical attribute of the concept represented by the frame. Figure 4 shows a frame for the concept car. A frame-based system consists of various interrelated frames representing the domain.

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96 At 18.

97 Humans arrive at solutions to problems not only by logic, but also by comparing analogous situations, applying heuristics, and even from intuition which can be very illogical. And to complicate matters even further from a logical point of view, these human thought processes tend to be in action simultaneously in a parallel mode (this is one of the reasons why researchers are currently investigating the possibility of using "neural networks" as they follow a parallel working method: see par 8.1.2.5 *infra*).

98 Waterman 21; Franken *et al* 430.

99 The idea of frames originated from Marvin Minsky in 1975 in a famous paper entitled "A framework for the representation of knowledge" published in *The psychology of computer vision*, McGraw-Hill, 1975 as cited by Layton 14 and Waterman 73. See also Franken *et al* 432.

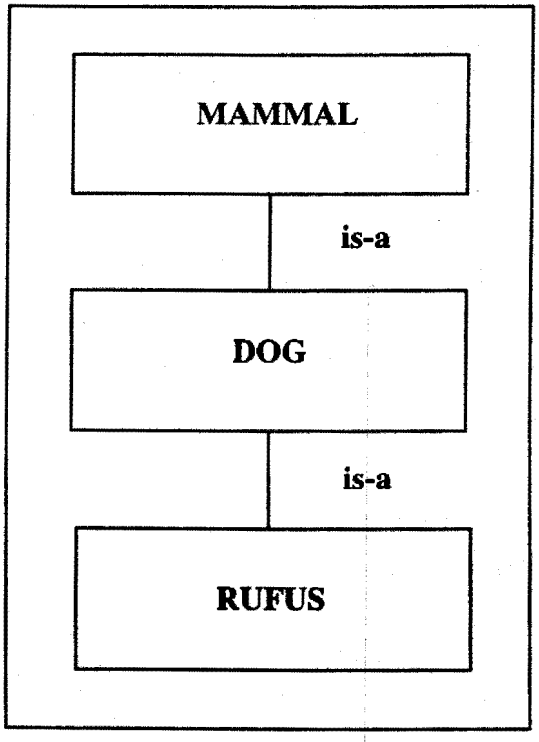

FIGURE 3 : SIMPLE SEMANTIC NET USING is-a

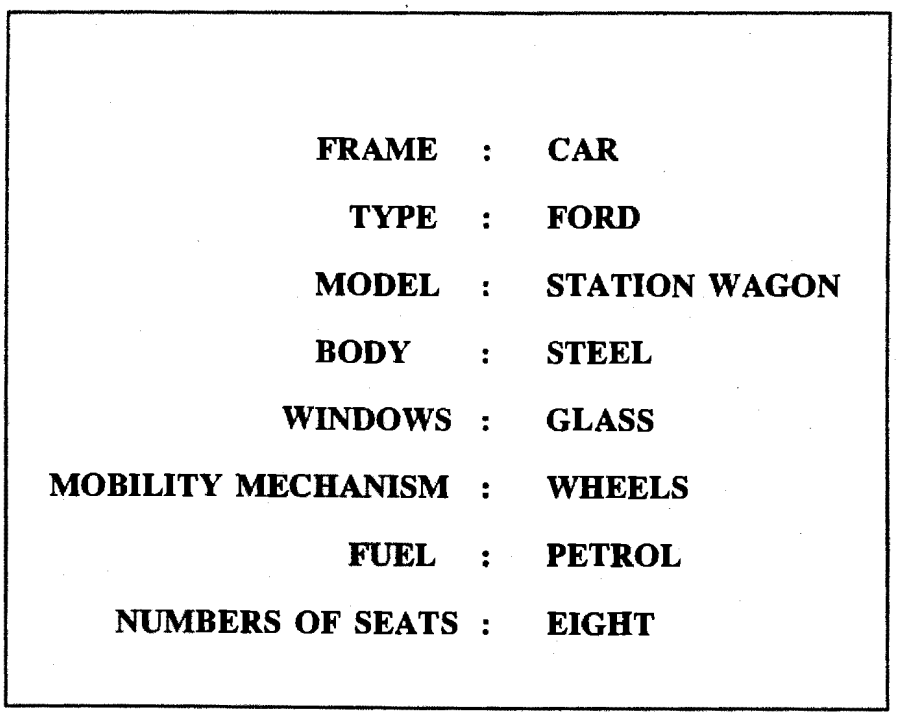

FIGURE 4 : A CAR FRAME

8.1.2.4 Case-based reasoning

This form of representation was first developed in the United States where it is particularly suited to the domain of Anglo-American law with their "common law" legal system and methods of *stare decisis*,[100] as it involves the manipulation of cases.[101] Case-based reasoning entails the use of frames to represent the facts and decisions of cases. New facts are then matched with existing cases to seek appropriate findings which can be used in analogical argument.[102]

8.1.2.5 Neural networks

This is a new method of representation which is based on the way the human brain works, imitating "brain logic" which functions in a parallel mode instead of "machine logic" which functions sequentially.[103] Neural networks are gaining acceptance among computer scientists and are seen as a potential breakthrough in the field of AI as they may prove capable of dealing with judgmental questions.[104] Also called "connectionism", the idea is to represent knowledge in the same way as networks of neurons in the brain. The contention is that each neuron's output is determined by the number and intensity of its inputs and that they learn to recognise patterns by

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100 The doctrine of case precedent, also followed in SA law: *Fellner v Minister of the Interior* 1954 4 SA 523 (A).

101 Franken *et al* 436-438; Rissland and Ashley 214-215.

102 See Rissland and Ashley 213-230 for a discussion of their research project HYPO, which is a precedent-based legal reasoner using the case-based reasoning method to perform legal reasoning in the domain of trade secret law.

103 Reed(1) 236-239.

104 The *Sunday Star* of 22 August 1993 reported on a research project at York University in northern England involving the development of neural networks in designing a computer model to recognise faces. The system is able to link certain characteristics of a person's face to a database of habits, twitches, facial expressions, movements and profiles associated with individuals: see Staff reporter *Sunday Star* of 22 August 1993.

adjusting the outputs of each neuron to other neurons.[105]

8.1.3 Inference engine

The inference engine contains knowledge of how to use the domain knowledge. It must be able to search for the appropriate knowledge and when it is located, to infer new knowledge from the existing knowledge in the knowledge base. In other words, it is responsible for managing the process of generating new information. The engine's search strategy that is used in this process is called the **inference paradigm** and although there are many different paradigms in use, most of them are based on two major methods:

(a) **forward chaining**, also called "data-directed inference", which is a bottom-up reasoning process that works forward from known conditions toward the desired goal[106]; and

(b) **backward chaining**, also called "goal-directed inference", which is a top-down reasoning process that works backwards from the desired goals to

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105 An example of a neural network software package is the *Neural control and optimisation package* from NeuralWare, USA. This is an advanced current state-of-the-art software suite which uses on-line adaptive neural network based techniques for process control problems in industries: Staff reporter of the *Engineering News* of 24 January 1997. Parallel computing has also been the key technique behind Deep Blue, the chess-playing IBM computer: Gelernter *The Times* of 19 May 1997.

106 Eg in the case of a rule that states:

IF : F and B exist
THEN : Z exists

when the system's goal is to determine whether or not Z exists, forward chaining would mean that the system will start by searching for rules that establish F and B and will then infer Z.

the requisite conditions.[107]

The choice of an inference paradigm and the way the inference engine is constructed depends ultimately on the nature of the problem domain and the type of knowledge representation in the ES.

In the early 1980's computer scientists began putting inference processes in an independent system, enabling ES builders to add only their particular domain knowledge to construct a finished ES. This led to the birth of **ES shells**,[108] most of which today contain a knowledge representation formalism as well as an inference engine.[109] An ES shell is created by removing the domain-specific knowledge of an existing ES and leaving the inference mechanism to be applied to a different problem domain.[110] This makes it possible for ES builders to construct different ES's simply by changing the domain knowledge that is put into the shell. There are various ES shells currently available on the market, each with its own characteristics.[111]

8.1.4 Knowledge update facility

This facility is used to modify the knowledge base of an ES in a domain where the

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107 Using the same example as in the previous fn, this would mean that the system starts with what it wants to prove, namely Z, and searches for the rules that conclude F and B which then establish Z. The inference chain created here is identical to the one created by forward chaining, the only difference lies in the method in which the rules are searched: Waterman 67; Franken *et al* 421.

108 These shells are also called "skeletal systems": Susskind 155.

109 Layton 7-8; Susskind 155-157; Franken *et al* 419.

110 The best known skeletal system is *EMYCIN*, meaning *Empty MYCIN*, which resulted from the removal of the infections diagnosis rules from the ES *MYCIN*: Susskind 155.

111 Eg, EXSYS (short for "expert system"), PC PLUS (derived from "personal computer").

knowledge continually expands and changes.

8.1.5 Explanation facility

Just like an expert, an ES must be able to explain the reasoning that led to the solution of a complex problem. This facility consists of identifying the steps in the reasoning process coupled with a justification of each step. Rolston[112] points out that the credibility of an ES depends largely on the system's ability to explain its own reasoning.

8.2 Persons involved in the production and use of expert systems

The persons involved in the production and use of ES's can be divided into two main groups, namely the **producers** and the **users** (see figure 5). The producers consist of the **developers**, who are the various persons involved in designing and building the ES, and the **suppliers,** who are the persons responsible for the distribution of ES's. In some instances ES's are acquired directly from the developers, in which case a supplier does not feature.[113] The users consist of **professional users** who use ES's as an aid in the execution of their professional duties, and **non-professional users** who use ES's for instruction in a specific domain. Based on the architecture and the nature of ES's, the following persons are involved in the production[114] and use of ES's:[115]

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112 At 11.

113 This will usually be the case when the ES is acquired in terms of a development contract (bespoke or customised software): see par 10.1.1 *infra.*

114 **Production** refers to the development (which includes the designing and the manufacture of an ES) and to the distribution (which includes the supply of an ES).

115 On the various persons involved in the production and use of ES's, see in general Waterman 8-11.

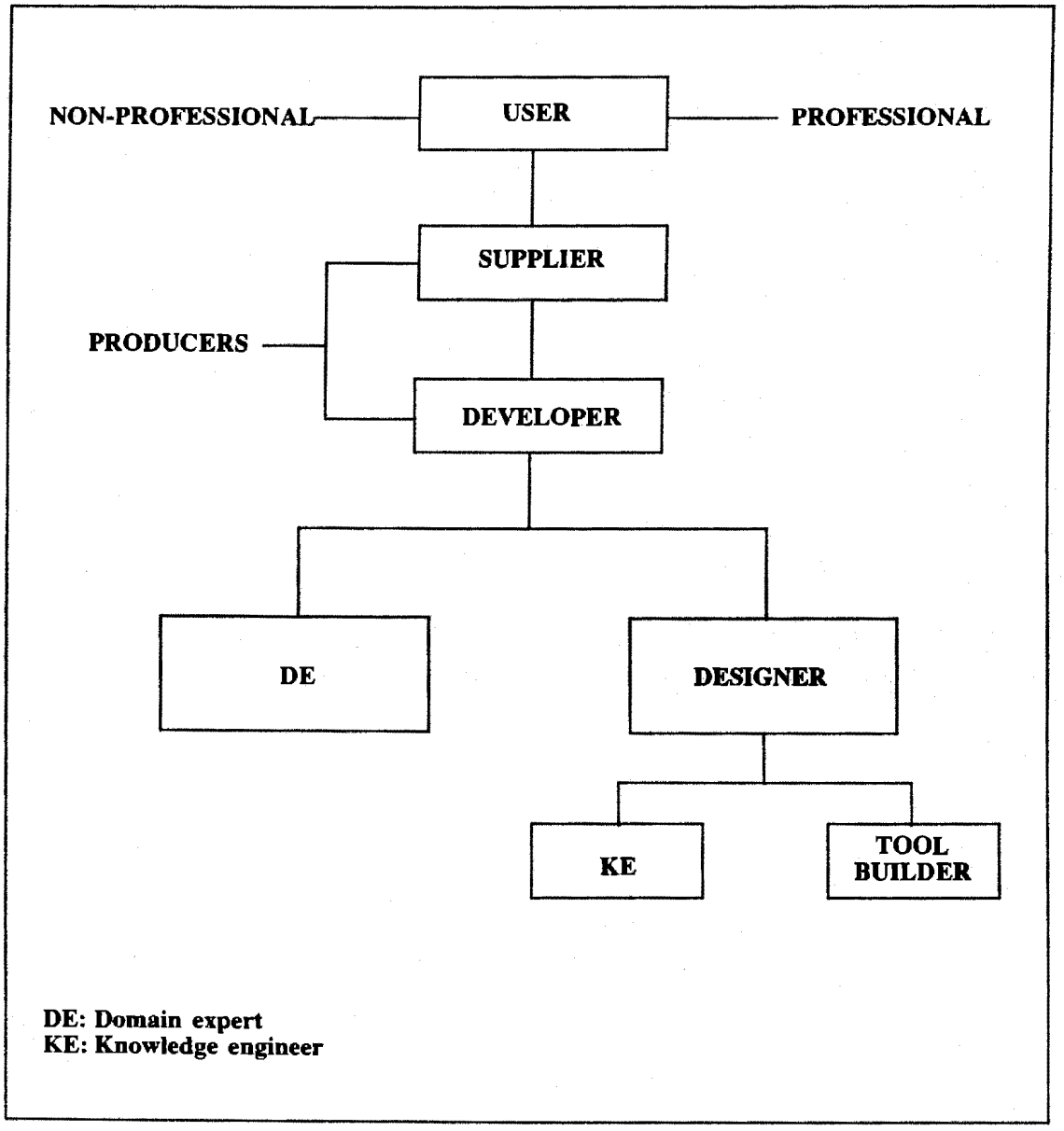

FIGURE 5: DIAGRAM OF PERSONS INVOLVED IN THE PRODUCTION AND USE OF ESs

8.2.1 Domain expert (DE)

This is a knowledgeable person with a reputation for solving problems in a certain field of knowledge. The DE is responsible for the content of the knowledge that is contained in the knowledge base of an ES and is one of the developers of an ES.

8.2.2 Expert-system-toolbuilder (toolbuilder)

This is the programmer that builds the expert-system-building tool which refers to the programming language and the support environment[116] used to build the ES. For this purpose an existing ES shell can be used or a complete individually tailored system can be constructed. The toolbuilder and the KE are referred to as the **designers** of the ES. The designers and the DE are the developers of the ES.

8.2.3 Knowledge engineer (KE)

This is the person, usually with a background in computer science and AI, who knows how to build ES's. He interviews the experts, organizes the knowledge, decides on its form of representation and may even help the toolbuilder to write the programming code. As stated in the previous paragraph, the KE is a designer of the ES and also one of the developers of the ES.

8.2.4 Developer

The developer of an ES, who may be a single person but is more likely to be a juristic person, is responsible for the production of the ES. The developer can be compared to the manufacturer of a product.[117] It may be that the developers of an ES consist

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116 The support environment consists of various facilities that help the user interact with the ES, eg debugging aids, editors and graphic devices.

117 See ch 3 par 3.3.6 *infra*.

of only the DE and the designers themselves, in which case they undertake the production as well as the designing of the system, but more often the developer consists of a software house by whom the designers are employed or with whom they and the DE are engaged in a contract, or to whom they have sold their system for production.

8.2.5 Supplier

The supplier supplies the ES to the user. There may be a chain of suppliers involved in the distribution of an ES, or it may be that the developer supplies the ES directly to the user, in which case there is no separate supplier.[118]

8.2.6 User

This refers to the person who uses the developed ES. The user is not involved in the production of an ES. In this study the term "user" actually refers to the "end-user" who is the person for whom the system has been developed as opposed to any other user of the system, for example a **programmer** who also uses the system for updating purposes.[119] A further distinction is made between a **professional user**, referring to a person in an acknowledged profession like a doctor, lawyer, engineer, etcetera that uses ES's in the course of the professional service she provides to third parties, and a **non-professional user** who is a lay-person in the domain of the ES that she is using, for example a taxpayer who uses an ES for advice on tax deductions. This type of user utilises the results of the ES herself, not involving third parties. The Intelligent Assistant is designed for use by professional users and the

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118 It must be noted that in many instances of delictual ES liability, the liability of the suppliers differ substantially from that of the rest of the producers because they (the suppliers) will not ordinarily incur manufacturers' liability as would the developers of software: see par 8.2.4 *supra*.

119 A user in its widest sense, is any person who uses an ES, such as an end-user, a DE, a KE, a toolbuilder or a support staff member.

Self-Help System is especially designed for non-professional users. The ES Machine can be used by any of the two typs of users. This distinction is important when liability is determined because of the different policy issues that come into play in a system that is used as a tool during the exercise of professional duties and in a system that is available on the mass-market as standard software in the form of a packaged product to consumers.[120] An interactive user is a user that has to provide information to the ES by way of user input.

9. Defective expert systems, the incorrect use of expert systems and the non-use of expert systems

In terms of the research question of this study, all parties who could possibly be held civilly liable in South African law when the use of ES's causes loss to someone, has to be identified. The situations in which the use of ES's could lead to loss being suffered is limited in this study to instances where a defective ES is used, or an ES is incorrectly used or an existing ES is not used.[121] The civil liabilities incurred through the use of ES's in each of these situations are discussed with reference to the three different types of ES's identified.[122] The following paragraphs describe the ways in which faults and errors in the design and structure of ES's, or the improper treatment of ES's, may lead to damage.[123]

120 Capper and Susskind 122 point out that the group of users consisting of lay-users who are private consumers, will attract increased liability from the ES producers in the event of loss suffered, but that the professional users, who are able to assess for themselves the suitability of an ES, will attract the least liability from the producers.

121 See ch 1 par 1.4.1 *supra*.

122 See ch 1 par 1.1 *supra*.

123 Par 9.2 and 9.3 *infra*.

9.1 The mechanism of computer systems

Although a computer is able to perform many complex tasks, it is inherently a moronically simple device that can only recognise one of two states such as **yes** or no, or **on** or **off**.[124] A computer must be told how to perform any task and this is done by having the instruction carried by a **computer program** called the **software** to the **hardware** which is the **computer** itself, referring to the boxes and electronics it contains.[125] A hybrid form of computer material containing elements of hardware as well as software has also been developed. This is called **firmware** and consists of a semi-conductor chip encoded with a computer program in its memory which is permanently embedded in the computer.[126] ES's may occur in the form of software or firmware. During the execution of any task the software and hardware are constantly interacting with each other. In this respect the technical distinction of software into **application software** and **operation system software** applies. The application software communicates with the computer through its operation system software in order to have a specific task performed.[127] ES's are a type of application software. The user uses the computer system[128] by supplying **input data** and receiving **output data**. **Data** refers to a statement of fact which must be distinguished from the concept of **information**, which is the knowledge conveyed to

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124 Binary notation is the term used to describe such a system and uses the symbols 0 and 1 to depict the two states. It is therefore plain to see how easily errors can arise when a state which should be 0 is 1 or vice versa: Kelman and Sizer 9.

125 Kelman and Sizer 10 illustrate the workings of a computer system by comparing it with a multi-layered sandwich where the sandwich is the hardware and the layers in between are different types of software. Van der Merwe 3 uses the analogy of a gramophone(hardware) and records(software), which should today perhaps be replaced with a compact disk player and CD's!

126 Van der Merwe 3 33; Visser 1984 *CILSA* 33.

127 For example, this thesis was written with the aid of **Wordperfect**, a wordprocessing program as the application software, using **Windows** which rides on the back of DOS, as the operation system software.

128 This is comprised of the computer (hardware) and the program (software).

the mind by the data.[129] Van der Merwe[130] is of the opinion that information is created by a computer organising otherwise worthless data. Geldenhuys[131] gives a comprehensive definition of "information" of which the ability to be perceived by the senses forms an essential prerequisite and states that only data which **cannot** comply with that requirement, does not amount to information. According to him, information as such cannot qualify as an object of law in the sense that there exists a "right to information" in general.[132] There are, however, certain categories of information that serve as legal objects in regard to which subjective rights exist, for example in the law of copyright, patents, trade marks, privacy, reputation, etc. In these categories information does serve as a legal object and it is quite possible that new categories of information could be defined and recognised in future because the existing subjective rights do not form a *numerus clausus*. Geldenhuys further points out that information itself is not legally protected, only certain deserving individual and community interests with regard to information are protected.[133] Such protection is found in legal rules which prohibit the infringement of these interests as are found in, for example, copyright law in the private interest sphere and the law pertaining to

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129 Kelman and Sizer 22.

130 At ix-x.

131 At 59.

132 Geldenhuys 93-97. The reason being that although certain information does comply with the following requirements for a legal object, this cannot be said of **all** information:

(1) the entity must be of value to some or other legal subject and be able to satisfy a need;

(2) it can be lawfully ascribed to one legal subject to the exclusion of others - this implies that it is not freely available and it can be controlled by humans and it is adequately certain, defined and independent for the possibility of enjoyment and disposement;

(3) the entity must be able to fulfil a function of community ordering (*gemeenskapsordening*).

133 "(R)egtens beskermwaardige indiwiduele en gemeenskaplike belange" : Geldenhuys 531-538.

state secrets in the public interest sphere.[134]

9.2 Faults and errors in expert systems

9.2.1 Source of errors

From the above explanation of the working of a computer system it can be appreciated that errors in the output of such a system can arise from many sources: the hardware or software may be faulty, or may develop faults when interacting with each other or with other components in the network,[135] or the user may have supplied incorrect or insufficient data. ES's in particular are more susceptible to faults because of their unique program design and function.[136] For purposes of this study it must be assumed that with regard to a defective ES, it has already been established that the source of any errors or faults lies in the ES itself, as opposed to any other software or hardware fault.

ES's do not necessarily have to be defective to cause an injury, the incorrect use of ES's may also cause damage.[137] ES's that are highly **user-interactive**[138]

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134 *Ibid.*

135 A computer network exists where one or more computers that store and maintain data, are able to communicate with other computers as and when required.

136 The most striking difference between ES software and conventional software is found in the separation of the knowledge base from the inference engine and the use of heuristics: par 5.1 and par 5.2 *supra*. ES's are therefore much more difficult to design at the conceptual level than conventional software applications, as it entails two development strategies, two functional and problem-solving methodologies and also two sets of maintenance requirements: Tuthill 1991 *AI Expert* 48.

137 An example is scenario (1) sketched in ch 1 para 1.1 *supra*, where the patient suffers damage due to a wrong diagnosis from MYCIN caused by incorrect data supplied by the doctor.

138 A term used to describe a system that relies on user input to match facts with information in the knowledge base. The Intelligent Assistant and the Self-Help

complicate the issue of liability because of the possibility that a malfunction could have originated from wrong input on the part of the user. Injury may also be caused through undue reliance placed on the system by the user.[139] These occurrences are referred to as the incorrect use of an ES, and for purposes of this study it is accepted that the ES thus used, is a sound ES, in other words, that the ES itself is not defective. As ES's become more commonplace, it is also conceivable that a person may be negligent in **not** using an existing ES. In other words, the non-use of an ES may cause an injury.

9.2.2 Types of errors: Faulty design/development and improper execution

Two basic types of errors may occur when ES's are used: those resulting from **faulty design/development,**[140] and those resulting from **improper execution.**[141] Design and development errors include errors incurred during the identification or determination of the mission statement, knowledge base, target audience, explanation subsystem, type and extent of user input, number of results, selection of knowledge-base source, speed of execution, training distribution or maintenance of the system. Execution errors include errors or bugs in the inference engine, program bugs in the knowledge base, user input errors and undue user reliance on system outputs. The first type of errors include the design and manufacture defects typically found in product liability cases,[142] which originate from a defect in the preliminary design of the product or from the actual manufacturing of the product. Such defects usually

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System are examples of user-interactive ES's: see par 11 *infra*.

139 See Turley 1988 *CLJ* 471.

140 See table 1 in appendix III.

141 See table 2 in appendix III.

142 The distinction that is drawn in product liability cases between design and manufacture defects can also be applied to defects in software: see ch 3 par 3.3.2.3 *infra*.

result in one or more of the producers[143] being at risk of incurring liability for subsequent damage caused. The second type of errors include design and manufacture faults in the execution of the ES, such as incorrect linking between the knowledge base and the inference engine which causes a fault in the execution of the program,[144] as well as errors by the user. These defects point to the users, and in some cases the producers, being at risk.[145] Appendix III contains a list of the various risk areas in which these errors may occur, together with a definition of the specific risk area and a description of the consequence of the error (exposure), concluding with an indication of the person who risks possible liability.[146]

9.3 Injured parties

Damage caused by the use of an ES may be sustained either by the user of the ES or by another person. The latter may be injured through the use of the ES by the user,[147] or through simply being in the vicinity of the operation of the ES, similar to the position of the "innocent bystander" in a situation of product liability.[148] The injured party who is not the user of the ES, may be in a contractual relationship with the user, such as the patient or client of the professional doctor- or attorney- user, or may be a third party in relation to the user, such as the dependent of the patient or client. In both these cases, the injured party would be a third party in relation to the producer of the ES. The injured user may be in a contractual relationship with the

143 The producers of an ES consist of the various people involved in the production of an ES, see par 8.2 *supra*.

144 See table 2 in appendix III.

145 *Ibid*.

146 Tables I and II are taken from Tuthill 1991 *AI Expert* 46-47 and adapted for purposes of this thesis to reflect the risk candidates as defined in this discussion.

147 For example, a professional user making use of the Intelligent Assistant.

148 For example, a pedestrian who is killed by an aeroplane crash caused by a defective ES Machine contained in the plane's fly-by-wire system: see ch 1 par 1 *supra*.

producers, either by way of a licensing contract or an acquisition contract.

10. The identification of possible liable parties when damage is caused by the use of expert systems

In the previous paragraphs the persons involved in the production and the use of ES's were identified and the ways in which they could have caused or contributed to a defective output from ES's were pointed out.[149] The question whether any of these persons may be liable for damage caused to an injured party by such use of ES's, will depend on the legal relationships that exist among themselves and the relationships existing between them and the injured parties. Another factor which influences the identification of possible liable parties, is the distinction in the kinds of output effected by software.[150] In a situation where the ES effects a material output[151], a direct causal link will usually exist between a defect in the software and the resulting damage, but where the ES has an intellectual output[152] only, the intervention of a human user can cause a break in the chain of causation between a defect in the software and possible damage.[153]

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149 See par 8.2 and 9.2 *supra*.

150 See par 10.1 *infra*.

151 An output that brings about a material or physical change in the environment, such as is found in an ES Machine: see par 10.1.2 *infra*.

152 An output consisting of information, in other words an intellectual output which does not by itself bring about a material change in the environment. Change in the environment will only occur after a human has acted upon the information, for example in the case of the Intelligent Assistant: see par 10.1.2 *infra*.

153 See ch 5 part II pars 9.1.3 and 9.2.2 *infra*.

10.1 Distinctions in the nature of software

10.1.1 Commercial distinction

The different ways in which software may be acquired are referred to as the **commercial distinction** in the nature of software. Software is generally acquired in two ways, namely as **standard** or **package software,** or as **custom** or **bespoke software**. Standard software is also known as **off-the-shelf software** because it is available in multiple copies over the counters of suppliers. Custom software is specifically developed on instruction from a client and usually only available in one copy for the client. Standard software is therefore analogous to mass-marketed products whereas custom software amounts to the rendering of a service.[154] It is also possible to acquire a hybrid form of software in the case of standard package software which is adapted to suit the user's requirements, resulting in **customised software**. The contention among Anglo-American writers[155] is that standard software should be classified as **products** which are then purchased or hired, and that custom software as well as the hybrid form of customised software amount to the rendering of **services** governed by a service contract.[156] In South African law the manner of acquisition does not depend on the nature of the goods or services, but on the nature of the transaction or agreement that took place between the relevant parties.[157]

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154 Reed(1) 67.

155 Reed(1) 67; Tapper 182; Cole 1990 *CLJ* 159; Tuthill 1991 *AI EXPERT* 49; Turley 1988 *CLJ* 458; Birnbaum 1988 *CLJ* 149.

156 Reed(1) 67 69 argues that the main purpose of a "software development contract" is the provision of a **service**, namely the production of software to the client's requirements, whereas the acquiring of mass-produced "package software" on physical media amounts to the provision of **goods**. The importance of the classification of software into goods or services in terms of Anglo-American law lies in the different theories of liability applicable to goods and services respectively: see ch 3 par 2.6.1.1 *infra*.

157 See ch 3 par 2.6.2.1 *infra*.

10.1.2 Functional distinction

The different functions of ES's can be explained in terms of the **functional distinction** in the nature of software. Software can either be incorporated into a machine (in the broad sense) or in a robot where its function is to instruct the machine or robot to move and work, or it can be used to instruct a computer to provide information and perform tasks to the benefit of a user.[158] In the first instance a **material output** is effected in that the robot is directed by the software to perform tasks that bring about physical and material changes in the environment, for example the plane can fly itself, the life-support system can change the patient's medicine, etcetera. In the second instance an **intellectual output** consisting of information is given to the user that runs the program on her computer. In the case of software used in a machine or robot, the software has the same role as any other mechanical device and may therefore be regarded as a component part of the machine or robot. In the case of an intellectual output, software has the role of a source of information for the human user.[159]

Although ES's fall into either of the two categories mentioned above, overseas computer literature[160] concerning the problem of legal liabilities refers mainly to ES's that generate an intellectual output. The reason for this is found in the fact that the output consists of **information** which, because of its intangible nature, struggles to fit into the classic legal concepts such as products, goods or services.[161] The giving of advice by way of an ES, in the domain of an acknowledged profession such as medicine or law, actually amounts to the rendering of professional services

158 Triaille 1993 *CLSR* 222.

159 Triaille *ibid* illustrates the distinction by describing the intellectual output software as a computer program that tells the user **how to** prepare an apple pie and the material output software when installed in a robot, as a computer program that causes the robot **actually to make** the pie.

160 South African legal literature has not yet produced any comments on ES liabilities.

161 Stuurman 128; Tapper 264.

through the operation of a computer program, which in the case of packaged software is sold as goods and more specifically, as a consumer product.[162]

The problem relating to classifying ES's as goods or services for purposes of contractual liability has already been referred to above.[163] With regard to delictual liability, the embodiment of professional services in a product leads to a conflict of policies in Anglo-American law when legal remedies are considered.[164] The reason is that products are governed by strict liability principles whereas services are ruled by negligence principles.[165] Tapper[166] summarises the problem as follows:

> The nature of expert systems is, in essence, that professional services are packaged and sold as consumer products. Given the wholly different legal policies which apply to the provision of professional services and of consumer products, it is not surprising that difficulty occurs.

In the codified legal systems of Germany and the Netherlands, product liability is in some circumstances regulated by strict liability principles in conformance with the directives of European Union law and in other instances by the general law of delict.[167] Damage caused by the provision of services are also regulated by the general law of delict.

In South African law, product liability has so far not enjoyed the prominence it has (and is continuing to have) in American law.[168] However, the possibility of

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162 See ch 5 part I pars A 1.2 and B 1.2 *infra*; part II par 9.2.3 *infra*; part III pars A 1.2 and B 1.2 *infra*.

163 See par 10.1.1 *supra*.

164 See ch 3 par 2.6.1.1 *infra*.

165 Tapper 264.

166 At 264.

167 See ch 5 part II pars A 5.1 and B 3.1 *infra*.

168 See ch 5 part I par B 3.3 *infra*.

regarding software as a product in South African law necessitates fresh attention to the principles of Aquilian liability requiring fault, especially when the difficult position of the plaintiff of having to **prove** negligence on the part of the producer, is taken into account.[169] The supply of incorrect or defective information is analogous to the making of a misrepresentation or misstatement.[170] In the context of ES applications such incorrect advice raises the problematic aspect in law of negligent misstatements causing pure economic loss.[171]

Another issue that needs to be addressed is that of "professional liability", both in regard to the professional user of an ES that gives professional advice, as well as with regard to the producers of software, as being members of a profession.[172] The latter instance raises the question whether the South African software industry has evolved into a fully-fledged profession yet, duly regulated and controlled.[173] In this respect the question further arises whether the producers of the ES should be held liable according to the standard of skill applicable to the profession in which the ES works, or whether they should be held liable to the standard of skill currently practised by the software industry or profession.[174] In this regard the impact of standardisation and certification needs to be investigated.[175] Closely related to the applicable standard of skill applicable, is the increasing awareness of "software

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169 See ch 3 par 3.3.6 *infra*.

170 Tapper 250; Reed(1) 72. See ch 3 par 3.3.6 *infra*.

171 See ch 3 par 3.3.6 *infra*.

172 The question whether a claim based on professional liability can be instituted against the producers of software, has been raised by Anglo-American computer law writers: see Cole 1990 *CLJ* 207-211; Bott *et al* 236-238. See also ch 5 part I pars A 2.7 and B 2.7 *infra*.

173 So far, only Britain formally recognises "software engineering" as a profession: see ch 5 part I par A 2.7 *infra*.

174 In the USA mention is made of "computer malpractice" in this regard: see ch 5 part I par A 2.7 *infra*.

175 See ch 3 par 3.3.6 *infra*.

safety" and the role of "quality assurance".[176]

10.2 Legal relationships

In some instances, liability will be based on contract, and in some instances, on delict. For example, where damage is caused to the user by a bug in the knowledge base which was traced to the incorrect representation method chosen by the KE,[177] the latter's liability towards the user will depend on the type of contract in existence between them and whether such liability has been excluded or not in an exemption clause of the contract. In the absence of a contract, liability will depend on the existence of a delictual ground of liability. If the KE designed the ES on instruction from a developer, the developer may be vicariously liable towards the user and the liability of the KE towards the developer will depend on the relationship between them.

In dealing with issues of liability a distinction is made between the two main groups of persons involved, namely the **producers** and the **users** (see figure 5). The producers consist of the software **developers** and the software **suppliers** in the chain of distribution. The developer consists of the DE, KE and toolbuilders. The users consist of **professional** users and **non-professional** users according to the function of the ES (see figure 6 for a depiction of links indicating the contractual relationships.)

10.2.1 Legal relationships among the producers

In the ordinary course of events the toolbuilder and the KE will be employed by the

176 *Ibid.*

177 Such an error is categorised as a faulty design/development type of error which occurred during knowledge acquisition and representation. See appendix III table 1.

developer[178] who may either be a software development company, also called a software house[179] or an individual. As shown in the previous paragraph, it is also possible for the KE and the toolbuilder to provide their services to the developer or to each other as independent contractors. The DE will provide the expert knowledge in terms of a contract with the developers for services rendered. The supplier will be in a contractual relationship with the developer of the ES.

ES's that give professional advice in a particular field of knowledge raise the question of the professional liability of the producers. Can the producers of such a system be held to a professional standard of negligence when harm is caused by a defective system?

10.2.2 Legal relationships between the producers and injured parties who are not users of the expert system

In the ordinary course of events no contract will exist between the producers and the injured parties who are not users of the system. Such injured parties will be in a similar position as the "innocent bystander" in situations where damage is caused through the use of a defective ES which means that any claim for compensation will be based on delictual liability.[180] It must be noted that the supplier of an ES does not incur the same liability as the developer of an ES who, in the case of a defective ES, is in the same position as the manufacturer of a defective product.

178 Reed (1) 66; Tapper 137.

179 A software house is a legal entity whose business it is to develop and market software.

180 See ch 3 par 3.3.6 *infra*.

10.2.3 Legal relationships between the users and producers

The user could either have bought the ES as **standard** or **off-the-shelf**[181] software from a software supplier or could have entered into a **software development contract** with the developer of the software. In the first instance there may be an acquisition contract[182] between the user and the supplier but not between the user and the developer, whereas in the second instance the acquisition contract may exist between the user and the developers themselves. In both instances a licensing contract may exist between the user and developer.[183] The first type of software is also referred to as **standard or package software** which is available in multiple copies from suppliers and the second type as **bespoke** or **custom software** of which there is usually only one copy designed to suit the client's specific needs.[184]

10.2.4 Legal relationships between the user and injured parties

A contract for the provision of services may exist between the user and the injured party. In the case of a professional user, the professional liability of the user may be at stake. It may also be that the injured party is not in a contractual relationship with the user, such as a dependant of the injured party, in which case only a delictual action is available.[185]

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181 "Off-the-shelf" means that the software is literally available from the shelves of the software house or supplier and is therefore comparable to a product.

182 See ch 3 par 2.6 *infra*.

183 See ch 3 par 2.5 *infra*.

184 Reed(2) 67 *et seq*.

185 The special actions of dependants are not discussed in this study.

11. Conclusion

From the outline of the structure of an ES given above,[186] it can be seen that it may be very difficult to determine precisely **who** is responsible for a design or development defect in an ES, since an error may originate from any one or more than one of the various parties collectively referred to as the **producers** of the system. With regard to the execution of an ES, it is also possible that the **users** of the system may be responsible for the incorrect use of the system. This difficulty is further compounded in a negligence action because of the burden on the plaintiff to prove that the defendant's conduct falls short of that of the reasonable person[187] in circumstances where the defendant possesses more knowledge about the facts that have to be proved, than the plaintiff does.[188] It is no easy task for an injured member of the public whose knowledge or access to knowledge of computer technology may be very scanty, to litigate against a sophisticated computer software company.

Another complicating factor in the identification of liable parties is the influence of the **displacing** effect of new computer and information technology media on legal relationships.[189] Displacement refers to the creation of a new electronic environment in which information is accessed, communicated and used. A new space called **cyberspace**,[190] in which physical restrictions of movement and limited capabilities are lifted, is entered through new ways of interacting with machines

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186 Par 8.2 *supra*.

187 The test for negligence: see Boberg 269; Van der Walt 65; Neethling *et al* 130 *et seq*.

188 See ch 3 par 3.3.6 *infra*.

189 Katsh 26.

190 Electronic space. *Cf* also Katsh 15 *et seq* in general.

endowed with the capability to respond to the user, such as ES's, **hypertext**[191] and **hypermedia**.[192] The result is a change in the **way** in which information is used, not in the **content** of information. Distances become irrelevant as computer networks disperse information in an electronic world.[193] Informational distance refers to how inaccessible or accessible a medium makes information.[194] In the domain of professions, these informational distances and media settings are specifically relevant because a professional, by definition, controls a body of knowledge. When access to information is small and informational distances become greater, institutional roles become more distinct and professional authority grows. Conversely, professional authority declines when informational distances become smaller.[195] Consequently, the emergence of sophisticated computer systems such as the ES's embodied in the Self-Help System is effecting a dramatic change in the manner in which professional services are provided. The availability of such systems to the general public adds to the decline of that particular domain's informational distance which inevitably results in a blurring of the traditional responsibilities and duties of the information-provider.

In the context of legal professionals for example, the status of lawyers is not simply related to their duties but also to their knowledge, and how distinct the information they possess and control is from commonly accessible information. The development of new links to legal information will inevitably change the role, authority and domain

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191 Hypertext refers to the representation of text in which keywords contain hyperlinks to other texts that expound on the keyword or on the original text and which themselves contain links to yet more texts: Katsh 198. It creates the opportunity to move through text in different ways by branching out of a text at a particular point and following a new direction; in other words, it is a non-linear form of acquiring information. *Cf* Katsh 198 *et seq*.

192 Hypermedia is the evolvement of hypertext in that hyperlinks are established between text and sound, graphics and video. Cf Katsh 198 *et seq*.

193 The "Internet" has revolutionised the accessibility and communication of global information.

194 Katsh 59.

195 Katsh 61.

of lawyers as the distance between law and citizen, and lawyer and layperson narrows. An example of such change has already been foreseen by some jurists who have raised issues concerning the unauthorised practice of professions through the use of computers as decision-aids.[196]

Some of these ES's, such as MES's, carry a great risk of potential injury to the vast amount of users when distributed on the mass-market. Another consequence of the proliferation of these software systems is the absence of any quality control or supervision of the content of the systems. In the case of ES's which furnish expert advice in the traditional professional domains such as medicine, law, architecture, etcetera, these systems, in contrast to their human counterparts, do not have to register with professional councils[197] and consequently the user public receives no protection by the organised profession. ES's built into safety-related products such as life-support systems also carry a risk of injury to users or third parties. The question arises whether the usual common law principles regarding delictual liability in South African law sufficiently protects injured parties in these instances. It is submitted that regard should be had to the imposition of strict liability principles in some instances of ES liability in analogy with the strict product liability principles applied in other jurisdictions.[198]

The following examples of hypothetical ES's will be used to discuss the potential liabilities involved:

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196 Willick 1986 *Rutgers C&TLJ* 22. Various legal and ethical aspects are involved when tasks which are traditionally considered central to professional practice are computerized. For example, most codes of professional ethics require practitioners to supervise the work of their subordinates personally, which rule serves as a safeguard against unauthorised practices. If computer systems capable of monitoring the work of subordinates are developed, this traditional safeguard in protecting the public's interest falls away.

197 An example is the compulsory registration of doctors and other health care practitioners with the Medical and Dental Council of South Africa in terms of the Medical, Dental and Supplementary Health Service Professions Act 56 of 1974.

198 See ch 6 par 7 *infra*.

(a) The Intelligent Assistant: an interactive ES produced for use by professional persons as a tool or decision-aid in the practising of their professions, for instance a MES to be used by a doctor in diagnosing an illness or prescribing a drug, a LES to be used by a lawyer in advising a client, drawing up documents or planning a trial or a design ES to be used by an engineer or an architect.

(b) The Self-Help System: an interactive system produced for in-home use by lay persons to advise them on matters such as financial investments, income tax planning, how to clean your swimming pool and even divorce proceedings.

(c) The ES Machine: a product which contains an ES as a component part, for example a fly-by-wire system in an aeroplane, a life-support system, or a radiation machine.

With regard to the commercial distinction[199] in software, the ES's in example (a) will normally be acquired as standard software as well as custom software. Those in example (b) will be treated as standard software because that is the usual way in which such systems will be made available to the public while those in example (c) will be acquired in the same manner as any other product (the ES being only a component part of the product).

These chosen examples represent a combination of the types of ES's that are currently available and reveal the legal issues that are most likely to occur if and when the use of such software leads to litigation. With regard to the functional distinction[200] in software, the ES's in examples (a) and (b) have intellectual outputs and example (c) illustrates a material output. The civil liability incurred by the

199 Par 10.1.1 *supra*.

200 Par 10.1.2 *supra*.

producers and the users will be discussed in terms of the three types of ES's identified above[201] and with regard to the defined use of ES's, namely where damage is caused because of the use of a defective ES, the incorrect use of an ES and the non-use of an ES.[202]

201 Namely, the Intelligent Assistant, the Self-Help System and the ES Machine.

202 See ch 1 par 1.4.1 *supra*.

CHAPTER 3

BASIS OF LIABILITY

1. Introduction

1.1 Objectives of this chapter

As stated previously,[1] this thesis has three objectives, namely to:

(a) identify all the parties that may possibly be held liable in the event of damage suffered through the use of an ES;

(b) determine the contractual and delictual causes of action for the institution of claims for damages arising from such use; and

(c) discuss the various forms of delictual liability arising from the use of an ES.

The previous chapter was governed by the first objective.[2] The people involved in the production and use of ES's were identified (see figure 5) and two main groups were distinguished: the people who develop and supply ES's or the **producers**; and the people who use the ES's or the **users**.[3] The producers consist of the developers and the suppliers, and the users may be professional or non-professional.[4] It is important to keep in mind the latter distinction between the various parties when ES liabilities are discussed, as different legal principles are applicable to the different

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1 Ch 1 par 1.2 *supra*.

2 Ch 2 *supra*.

3 See ch 2 par 10.2 *supra*.

4 See ch 2 par 8.2.6 *supra*.

categories of parties.[5]

In this chapter the second objective[6] will be explored by means of a discussion of the underlying principles of **contractual and delictual liability** in our law. Although both these grounds of liability constitute forms of unlawful conduct, the aims of the two types of liability differ considerably. Contractual liability, in the sense of determining the remedies arising from a breach of contract,[7] primarily seeks to remedy breaches of an agreement, whereas the law of delict primarily seeks to compensate an injured party for loss suffered.[8] Contractual liability which refers to the remedies arising from breach of contract, depends on the type of contract entered into and is only applicable between the contracting parties.[9] Delictual liability depends on the infringement of a subjective right or the breach of a legal duty to compensate for loss caused.[10] It was further established that three basic types[11] of ES's occur in the

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5 For example, the contractual relationship between the supplier and the user will, under normal circumstances, be regulated by the principles of, for example, an agreement of purchase and sale whereas it may be that no acquisition contract is in existence between the developer and the user: see par 2.6.2 *infra*. However, a legal duty to prevent harm may rest on the developer towards the user, which may lead to delictual liability: see par 3.3.2.3 *infra*.

6 The third objective, namely a discussion of the various forms of delictual liability arising from the use of ES's, is treated in chs 5 and 6 *infra*.

7 Contractual liability can be used in two senses: it may either refer to the obligation of fulfilling the terms of the contract, or it may refer to remedies arising from the breach of contract: see par 2.1 *infra*. This study is concerned with contractual liability in the latter meaning.

8 Although it is accepted that a breach of contract can also amount to a delict, in that it is an unlawful and culpable act by one contracting party that causes damage to another contracting party, it is for historical and practical reasons considered as part of the law of contract and should not be treated as essentially the same as a delict as there are distinctive rules applying only to the law of contract and delict respectively: Neethling *et al* 6; Van der Walt 7; Van der Merwe and Olivier 479; Van der Merwe *et al* 236; Van Aswegen 424 *et seq*; Hosten *et al* 700-701.

9 See par 2.2 *infra*.

10 See par 3.3.2 *infra*.

world today and that various legal relationships may exist when they are used.[12] Damage caused by the use of ES's is defined as referring to three situatons, namely damage caused by the use of a defective ES, the incorrect use of a sound ES, and the non-use of an existing ES.[13]

1.2 Basis of contractual liability

The contractual relationships between and among the producers and users will be determined by the manner in which an ES is acquired, through an acquisition contract, and by the existence of a valid and enforceable software licensing agreement.[14] From the outset it must be understood that in the case of normal software use, two distinct contractual relationships are relevant between the producers and users: one contract comes into being when the software is acquired, whether it is one of sale, lease or the provision of services between the supplier and the user, namely the **acquisition contract**; and the other contract consists of the licensing agreement between the user and the developer of the software, the **licensing contract** (see figure 6).[15] The first contract regulates the rights and duties of the contracting parties which arise from the way in which the software is acquired, and the second contract regulates the user's use of the software in terms of the immaterial property rights of the developers and also creates an opportunity

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11 The Intelligent Assistant, the Self-Help System and the ES Machine: see ch 2 par 11 *supra*.

12 Ch 2 par 10.2 *supra*.

13 See ch 1 par 1.4.1 and ch 2 par 9 *supra*.

14 The manner in which the ES is acquired and the legal relationships existing among and between the parties are factors determining the type of contract entered into by the parties: ch 2 par 10 *supra*.

15 The possibility of licensing as a form of acquisition is discussed *infra*: see par 2.6.2.1 (d).

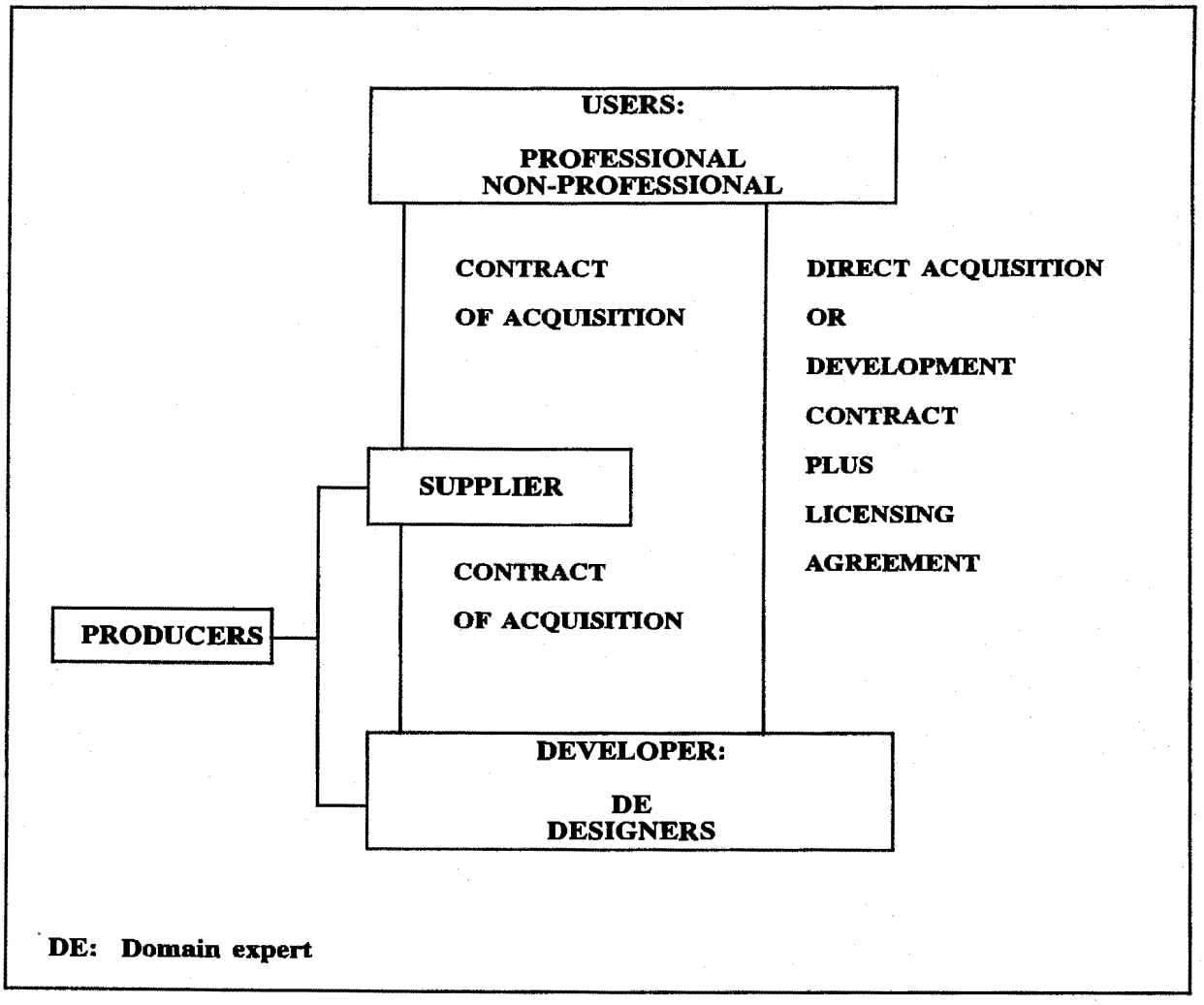

FIGURE 6 : DEPICTION OF LINKS INDICATING CONTRACTUAL RELATIONSHIPS BETWEEN USERS AND PRODUCERS OF ES's

for the latter to limit their liability in case of damage caused.[16] The same situation applies to the acquisition and licensing of ES software.

The contractual relationships among the producers of ES software will be determined by the acquisition or distribution agreement between the developer and the supplier,[17] and by the terms of employment or the terms of a programming services contract that may exist between the various developers such as the DE, the KE and the toolbuilders.[18] In cases where a third party is injured through the use of an ES by the user, a contractual relationship for the provision of services (which may be of a professional nature or not) may exist between the user and the injured party. Moreover a licensing contract also exists between the producer and user, whether the latter is a professional or not.

It is possible to exclude liability for loss or damage arising from the use of the ES software or from errors or faults in the software by way of an exclusion clause[19] in any of the above-mentioned contracts, provided that the clauses are not found to be contrary to public policy.[20] Exclusion or exemption clauses are terms which exclude or limit the contractual and/or delictual liability of a contractant.[21] Where only contractual liability is excluded, an injured party may still have a delictual action at her

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16 Apart from the question whether an enforceable licensing agreement has been entered into by the parties, the usage of the software is still restricted by the copyright protection provisions of the Copyright Act 98 of 1978: Maré 71.

17 An independent supplier does not exist in cases where the software is acquired directly from the developer: see ch 2 par 10.2.1 *supra*.

18 Tapper 164-170; see also par 2.6.2.2 *infra*.

19 Van der Merwe 69; Tapper 199 *et seq*; Van der Merwe *et al* 214 *et seq*.

20 *Morrison v Angelo Deep Gold Mines Ltd* 1905 TS 775 779; *Wells v SA Alumenite Co* 1927 AD 69 72.

21 See par 2.4.2 *infra*.

disposal provided the delictual requirements are met.[22] If delictual liability is also excluded an injured party may not have any action at her disposal. Notably in the case of computer licensing agreements, it is very common for the producers of software to minimise their liability in respect of both the type and the extent of loss for which they are liable.[23] In this way liability for misrepresentation, breach of contract or liability imposed by the specific *naturalia*[24] of a contract may be excluded or limited, the latter by putting a financial cap on the amount of damages that may be claimed by one defendant.[25] As exemption clauses are used more often, it is becoming clear that they are used to empower contractants in a strong bargaining position to exploit co-contractants in a weaker position.[26] Because of this, many such practices are viewed as unfair in foreign jurisdictions and have been restricted by legislation.[27] In this regard the incidence of standard form contracts plays a significant role in the determination of contractual liabilities.[28] In South African law there is no statutory provision applicable to exemption clauses in general but a few specific provisions proscribe the inclusion of some terms in certain types of contracts.[29] However, the South African Law Commission (SALC) is currently

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22 See par 3.3 *infra*.

23 See also Pistorius 1993 *SA Merc LJ* 17; Eiselen 1995 *SA Merc LJ* 14; Maré 16-19.

24 *Naturalia* are the terms of a contract which are attached *ex lege* to each contract of a particular class: see par 2.3 *infra*.

25 Van der Merwe *et al* 214.

26 See par 2.4 *infra*.

27 Examples of this type of legislation are found in the English Unfair Contract Terms Act (UCTA) and the German *Algemeine Geschaftsbedingungen Gesetz* of 1976: see ch 5 part I and part II. See also Tapper 199; Van der Merwe *et al* 214-216.

28 See par 2.4 *infra*. *Cf* Van der Merwe *et al* 225; Maré 9; Symon 72.

29 For example, ss 6(1)(c) and (d) of the Credit Agreements Act 75 of 1980 which prohibit certain exclusion clauses in a credit agreement, and s 15(1)(b) and (c) of the Alienation of Land Act 68 of 1981 which prohibit certain terms in a contract for the purchase of land.

researching the possibility of drafting controlling legislation in this regard.[30] For this reason, specific reference is made only to Anglo-American law as it pertains to exemption clauses, as the United States and England are among the first countries in the world to legislate against unconscionable contract terms, and it seems that the South African legislator may follow suit.[31] No other comparative law discussion with regard to contractual liability is undertaken as the main emphasis of this study falls on delictual liability issues.

Another reason for the inclusion of certain aspects of Anglo-American law in the discussion of contractual liability is the high incidence of computer contracts in South Africa that are subject to Anglo-American law.[32] This stems from the fact that many software programs currently in use in South Africa are developed in the United States of America and Great Britain, and are consequently distributed with a licensing agreement containing terms relating to a foreign legal system and also stipulating such legal system as the applicable system in case of litigation.[33] It is to the advantage of contractants to be aware of the invalidity or not of exemption clauses in certain jurisdictions.[34]

1.3 Basis of delictual liability

An injured party may also have a claim based on **delict** against the person who wrongfully caused the harm if delictual requirements are met and a delictual claim is

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30 Project 47 of 1984: see par 2.4.3 *infra*.

31 See par 2.4.3 *infra*.

32 Van der Merwe 60; Symon 78; Morgan 1991 *Elektron* 11; Eiselen 1995 *SA Merc LJ* 14.

33 *Ibid*. See also appendix IV par (5) which contains a choice of law clause of the license agreement of *Borland Inc*, based in California, regarding packaged custom software bought in South Africa that states that the licence statement shall be "construed, interpreted, and governed by the laws of the State of California".

34 See ch 4 par 4.4 *infra*.

allowed.[35] The delictual action may exist on its own or may subsist in addition to the contractual claim. The latter will be the case where, apart from breach of contract, the conduct complained of also wrongfully and culpably infringes a legally protected interest, existing independently of the contract.[36] In such circumstances concurrence of claims may occur.[37] In the absence of a contract between the injured party and the producers of the ES, or in the case of a contract which excludes liability, by way of an exemption clause not covering delictual liability, the plaintiff's only recourse will lie in a delictual action. In the event that an agreement between producers and users contains a valid exclusion of contractual and delictual liability, the injured contractant will not be able to institute a claim for damages suffered to the extent that it is excluded or limited.[38] This situation could lead to a very unjust position in the case of a defective ES which is mass produced and distributed as a consumer product in the form of standard software. It is submitted that such an ES constitutes a commercial product for which the developer incurs **manufacturer's liability**, which liability the developer should not be able to evade through an exemption clause.[39] The extent to which current product liability principles can satisfactorily be applied to the situation of ES liability, is discussed later.[40]

In the case of damage caused through the incorrect use or non-use of an ES, a delictual action may lie against the user of the ES, based on the latter's legal duty towards the injured party, or an infringement of the injured party's subjective right.[41] Where the user is a professional who relies on an ES during the execution of her

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35 Neethling *et al* 6-7; Van Aswegen 298; Van der Merwe and Olivier 468 *et seq.*

36 *Ibid.*

37 Van Aswegen 96 *et seq.* See also ch 4 par 2.2 *infra.*

38 See par 2.4.2 *infra.*

39 See ch 6 par 5 *infra.*

40 See ch 6 *infra.*

41 See par 3.3.2 *infra.*

professional duties, the **professional liability** of the latter is at stake.[42] The question also arises whether software producers are professionally liable towards the user and the injured for the defective computer system they produced,[43] and consequently if a **computer malpractice** claim may be instituted against them.[44] In the case of an ES with intellectual output, the user's liability for **negligent misrepresentation**[45] may also arise, and because many ES's are likely to cause only financial loss, liability for **pure economic loss** is also discussed.[46] Because of the nature of ES's, in that they consist of information, the producers may also be liable on the grounds of a negligent misrepresentation where incorrect information causes damage. The possibility of the non-use of an ES leading to liability on the grounds of an *omissio*, is also investigated.[47]

An exposition of the delictual liability arising from the use of ES's constitutes the third and last objective of this study, and is discussed more fully in a separate chapter[48] after a comparative law study in this regard, whereas this chapter only contains a brief exposition of the basic principles underlying delictual liability in the realm of ES's.

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42 See par 2.7 *infra*.

43 See par 3.3.3.3 *infra*.

44 See ch 6 par 6 *infra*. The possibility of a malpractice claim is advanced by American commentators on software liability: see ch 5 part I par B 2.2.3 *infra*.

45 See ch 6 par 2 *infra*.

46 See ch 6 par 3 *infra*.

47 See ch 6 par 4 *infra*.

48 Ch 6 *infra*.

2. Contractual liability

2.1 Introduction

Contractual liability may refer to either the obligation of fulfilling the terms of a contract or to remedies arising from a breach of contract.[49] In the first instance the contractant is liable to perform in terms of the contract and in the latter she will incur liability for breach of contract, which can include liability for damage caused by the non- or improper performance of the contract. In the case of a claim for damages arising from a defective ES or the incorrect use of such a system, contractual liability that stems from an act of breach of contract committed by one of the contracting parties is relevant.[50] The cause of action in all instances where breach of contract takes place is in fact, a breach of contract. The question whether a breach of contract took place depends on the terms of the particular contract.[51]

A computer program is typically acquired subject to a licensing agreement, which agreement purports to establish a contract between the developer of the software and the user of the software (in this case the ES), regulating intellectual property rights,

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49 Van der Merwe *et al* 238 *et seq*.

50 Christie 588.

51 An area of contention is the question whether or not breach of contract constitutes a new cause of action distinct from the conclusion of a contract. In the case of a claim for specific performance in terms of a contract, the claim is based on the contents of the contract and not on the breach that took place: *Joss v Barclays Western Bank Ltd* 1990 1 SA 573 (T) 581. However, where damages is claimed, it cannot be said that the original obligation was to pay damages: Van Aswegen 313. De Wet and Van Wyk 174 are of the opinion that a new cause of action does not arise, but that the original obligation undergoes a change in content, substituting performance for damages. Van der Merwe *et al* 239 contends that breach does constitute a new obligatory fact which amounts to a new cause of action. See also Van der Merwe and Olivier 479. This view was supported in *Imprefed (Pty) Ltd v National Transport Commission* 1990 3 SA 324 (T).

restricting the use of the software and limiting the product liability of the producers.[52] In the case of standard software, the licensing agreement usually accompanies the software in the form of a shrinkwrap agreement[53] and in the case of custom software, it is given to the user as a separate contract.[54] However, the ES may be acquired from the software supplier either by way of a **purchase and sale** agreement, a **lease** agreement, an agreement for the **letting and hiring of work**, and possibly, by way of **licensing** which is distinguished from the licensing agreement regulating intellectual property rights referred to above.[55] Consequently, two agreements come into existence; (1) the licensing agreement that exists between the developer and the user; and (2) the contract by which the user acquires the software from the suppliers.[56] In this regard the commercial distinction in the nature of software referred to earlier[57] becomes relevant as it usually determines the way in which the software is acquired. In the world of computers, extensive use is made of standard form contracts which may pertain to both the acquisition contract as well as the licensing agreement.[58] This study is concerned primarily with liability for breach between parties in a contractual relationship regarding the acquisition and use of ES software.[59]

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52 See appendix IV for an example of a typical licensing agreement; see also par 2.5 *infra*.

53 See par 2.4.2 *infra*.

54 In the case of custom software, the licensing agreement may form part of the software development contract: see par 2.5.1 *infra*.

55 See par 2.6.2.1 *infra*.

56 See fig 6 for a depiction of links indicating possible contractual relationships. See also Reed(2) 46 *et seq*.

57 Ch 2 par 2.3 *supra*.

58 Tapper 144; Franken *et al* 60; Maré 9.

59 Breach of contract resulting from infringements of the immaterial property rights of the defendant, contained in the licensing contract, is specifically excluded: see ch1 par 1.4 *supra*.

2.2 Requirements for contractual liability

2.2.1 The existence of a valid contract

The general principles relating to the law of contract apply to all the various contractual relationships sketched above,[60] including the relationship created by the conclusion of a licensing agreement which, in South African law, is an innominate contract unknown to our common law.[61] A contract is an agreement entered into between parties with the intention of creating an obligation.[62] The primary requirement for a contract creating obligations is the intention to be legally bound on the part of both contracting parties.[63] Further requirements for a valid contract are that the parties have the necessary capacity[64] to enter into the contract, that the agreement is capable of performance[65], that the contract is lawful[66] and that the

60 Par 2.1 *supra*.

61 See par 2.5 *infra*. *Cf* Eiselen 34; Maré 117; Pistorius 1993 SA M erc LJ 2.

62 Van Rensburg *et al* 188; De Wet and Van Wyk 9; Christie 2; Van der Merwe *et al* 7. An agreement is a mutual understanding between two or more persons which exists when these parties have come to a conscious accord that they intend to create an obligation with a specific content between them: Joubert 21.

63 Joubert 21; Van Rensburg *et al* 188; De Wet and Van Wyk 13 *et seq*. *Cf Mondorp Eiendomsagentskap (Edms) Bpk v Kemp & De Beer* 1979 4 SA 74 (A).

64 Every person is presumed to have contractual capacity: Van Rensburg *et al* 211. For the categories of persons with no or limited capacity to contract, see Van Rensburg *et al* 212.

65 If performance to which the parties agree is objectively impossible, the contract is void: *Rood en Van Wyk v Van Ryn* 1913 CPD 311; *Wilson v Smith* 1956 1 SA 393 (W); *Blou Bul Boorkontrakteurs v McLachlan* 1991 4 SA 283 (T).

66 The rule is *ex turpi causa non oritur actio*: *Jajbhay v Cassim* 1939 AD 537; *Kelly v Wright, Kelly v Kok* 1948 3 SA 522 (A). A contract is illegal if the conclusion, performance or object is prohibited by legislation or is contrary to good morals or public policy: *Sasfin (Pty) Ltd v Beukes* 1989 1 SA 1 (A); *Magna Alloys & Research (SA) (Pty) Ltd v Ellis* 1984 4 SA 874 (A).

required formalities (if any)[67] are satisfied.[68] In the case of joint parties, the nature of the contractual relationship depends on the intention of the parties.[69]

Persons are generally in agreement if there has been a complete meeting of their minds. In other words, the intention of one party must correspond exactly with the intention of the other party.[70] It may happen that a person's intentions are misinterpreted or that a person is deliberately or negligently misled about the other's intentions. In this event a party to a contract is only held bound to the contract in accordance with the reasonable impression conveyed by her conduct.[71] To this extent it is said that the approach to contract is objective.[72] The contracting parties must have the serious and deliberate intention to bind themselves in law.[73]

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67 In general there are no prescribed formalities for a binding contract and parties can make their intentions known in any form they wish: *Goldblatt v Fremantle* 1920 AD 123; *Ally v Dinath* 1984 2 SA 451 (T). In some exceptional areas where the law does prescribe formalities, such as in the case of the alienation of land, compliance therewith is necessary before a valid contract is constituted: s 2(1) of the Alienation of Land Act 68 of 1981.

68 Joubert 21 *et seq*; Van Rensburg *et al* 211 *et seq*; De Wet and Van Wyk 9-24.

69 See Van der Merwe *et al* 168; see also par 2.2.2.2 *infra*.

70 The intention theory holds that the agreement between parties forms the basis of a contract. The parties must not only **be** of the same mind, they must also **know** that they are: *Kunsmis (Edms) Bpk v AE & CI Bpk* 1984 2 SA 261 (W); *Joel Melamed and Hurwitz v Vorner Investments (Pty) Ltd* 1984 3 SA 155 (A).

71 "The promisor is bound to perform what his language justified the promisee in expecting" *per* Innes JA in *Pieters and Co v Salomon* 1911 AD 121 at 138. See also *Van Ryn Wine and Spirit Co v Chandos Bar* 1928 TPD 417 423; *Hodgson Bros v SA Railways* 1928 CPD 257 261; *National and Overseas Distributors Corporation (Pty) Ltd v Potato Board* 1958 2 SA 473 (A); *Ocean Cargo Line Ltd v FR Waring (Pty) Ltd* 1963 4 SA 641 (A) 653; *Spes Bona Bank Ltd v Portals Water Treatment SA (Pty) Ltd* 1983 1 SA 978 (A) 984; *Sonap Petroleum (SA) (Pty) Ltd v Pappadogianis* 1992 3 SA 234 (A).

72 Van Rensburg *et al* 189.

73 This intention is also referred to as the *causa contractus: Conradie v Rossouw* 1919 AD 279.

Consensus or conscious agreement is usually reached by offer and acceptance,[74] although contracts can be concluded by other means.[75] In the case of software, a very popular method to reach agreement is by means of provisions contained in a **shrink-wrap licence.**[76] In terms of the general requirements of offer and acceptance, an offer will only be regarded as valid if it is definite and complete[77] and if it contemplates acceptance and resultant obligations.[78] For a valid acceptance to take place, the acceptance must be unconditional[79] and it must be accepted in the prescribed manner[80] by the offeree[81] in response to the offer.[82] The last-mentioned requirement is especially relevant in the case of a shrink-wrap licence where the offer is made to the general public and a person has to be aware of the offer before it can be accepted.[83]

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74 Van Rensburg *et al* 190 *et seq*; Van der Merwe *et al* 42 *et seq*; De Wet and Van Wyk 31 *et seq*. The offer is a statement of intention stipulating the performance and terms to which the offeror is prepared to be bound and the acceptance is a statement of intention whereby the offeree's assent to the offer is signified.

75 *Estate Breet v Peri-Urban Areas Health Board* 1955 3 SA 523 (A).

76 See par 2.5.2 *infra*.

77 The offer must contain a clear indication of the offeror's intention otherwise it can be declared "void for vagueness": *Humphreys v Cassell* 1923 TPD 280; *Mouton v Hanekom* 1959 3 SA 35 (A); *Kantor v Kantor* 1962 3 SA 207 (T).

78 *Wasmuth v Jacobs* 1987 3 SA 629 (SWA) 633.

79 *Watermeyer v Murray* 1911 AD 61; *ACC Bio Kafee (Edms) Bpk v Raad van Kuratore van Warmbadplase* 1957 4 SA 183 (T); *Van Jaarsveld v Ackermann* 1975 2 SA 753 (A).

80 *Laws v Rutherford* 1924 AD 261; *Ebrahim v Khan* 1979 2 SA 498 (N); *Ficksburg Transport (Ems) Bpk v Rautenbach* 1988 1 SA 318 (A); *Amcoal Collieries Ltd v Truter* 1990 1 SA 1 (A).

81 *Blew v Snoxell* 1931 TPD 226; *Baker v Crowie* 1962 2 SA 48 (N); *Bird v Summerville* 1961 3 SA 194 (A).

82 See Van der Merwe *et al* 47-51.

83 See par 2.5.2 *infra*.

2.2.2 Breach of contract

2.2.2.1 Definition of breach

A breach of contract is traditionally described as malperformance (*wanprestasie*).[84] Malperformance consists in the breach of a promise to perform timeously and properly as agreed to in the contract. Breach of contract is not limited to malperformance, it is a much wider concept encompassing one contractant's wrongful conduct towards the other contractant. It may refer to any act of a contractant which infringes the personal rights of the other contractant arising from the contract, or which breaches a duty of a more general nature (in that the conduct is unacceptable in terms of the norms that require a contractant to comply with general contractual duties).[85]

2.2.2.2 Forms of breach

Non-compliance with any one term[86] of a contract would constitute a breach of contract upon which a party can base an action for damages provided loss is suffered. The forms of breach may be divided into two main groups, namely malperformance and anticipatory breach. Malperformance consists of positive malperformance, negative malperformance of the debtor (*mora debitoris*) as well as negative malperformance of the creditor (*mora creditoris*). Anticipatory breach of contract includes forms of breach that anticipate eventual malperformance, namely

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84 On breach of contract, see in general Van der Merwe *et al* 235 *et seq*; De Wet and Van Wyk 157 *et seq* ; Christie 587 *et seq* ; Farlam and Hathaway 471 *et seq*; Van Rensburg *et al* 249 *et seq*.

85 The wrongfulness of conduct in breach of contract is therefore, similar to wrongfulness in delict, determined in terms of rights as well as duties: Van der Merwe *et al* 237.

86 See par 2.3 *infra*.

repudiation and prevention of performance.[87]

Positive malperformance occurs where the contractant does not comply with the terms of the contract in that she either renders defective performance or does something which she undertook not to do.[88] Positive malperformance therefore consists of conduct which is not in accordance with the content of the debtor's contractual duties.[89] Defective, inadequate or incomplete performance results in a breach of the debtor's positive duty.[90] This form of breach of contract can occur when a defective ES is used, when a sound ES is used incorrectly or when an existing ES is not used at all in some circumstances.[91] If a breach of contract has occurred, the innocent party may direct the available remedies towards either performance or rescission of the contract.[92]

As ES's are constructed by teams of people it is appropriate to state the position of co-debtors and co-creditors with regard to liability for performance. In the case of co-debtors and co-creditors two situations can be distinguished: simple joint debtorship or creditorship and solidary co-debtorship or co-creditorship.[93] In the case of the former each joint debtor and creditor is liable for and entitled to her pro rata-share of

87 Van Rensburg *et al* 249.

88 Van Rensburg *et al* 271-272; De Wet and Van Wyk 177-179; Van der Merwe *et al* 250 *et seq*.

89 *Collen v Rietfontein Engineering Works* 1948 1 SA 413 (A); *Sishen Hotel (Edms) Bpk v Suid-Afrikaanse Yster & Staal Industriële Korporasie Bpk* 1987 2 SA 932 (A); *Schatz Investments (Pty) Ltd v Kalovyrnas* 1976 2 SA 545 (A); *SA Sentrale Ko-op Graanmaatskappy Bpk v Shifren* 1964 4 SA 760 (A); *Sweet v Ragerguhara* 1978 1 SA 131 (D).

90 *Ibid*.

91 In some circumstances the non-use of an ES may constitute positive malperformance in terms of a party's contractual duty: see par 2.3 *infra*.

92 Van der Merwe *et al* 251-256; De Wet and Van Wyk 178.

93 Van der Merwe *et al* 168 *et seq*.

performance only. In the case of the latter, any one of the co-debtors is liable for the full performance and any one of the co-creditors is entitled to the full performance.[94]

2.2.2.3 Remedies for breach of contract[95]

The remedies for a breach of contract directed at the performance of the contract consists of a claim for **specific performance** by the other party to the contract, or for a sum of money in lieu of performance; if it is directed at the rescission of the contract, it consists of a claim of **cancellation** of the contract, or **rescission**. In either case the innocent party is also entitled to claim for **damages** for any foreseeable patrimonial loss suffered as a result of the breach (that is consequential loss).[96] Non-patrimonal loss such as discomfort, pain and suffering may also be caused by a breach of contract. An example of such loss can be found in the case of a doctor who, by not applying the necessary skill which she has undertaken to apply, negligently prescribes the wrong medicine resulting in unnecessary suffering of the patient. Apart from wasted medical costs, the patient also suffers non-patrimonial loss in the sense of discomfort. Such non-patrimonial loss is not recoverable *ex contractu* in terms of a policy decision of our courts.[97]

Where a claim for patrimonial loss does lie, the onus of proof is on the contractant claiming the damages.[98] The damages should place the plaintiff in the same

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94 This type of liability is also called joint and several liability and can only arise if created specifically by the contractants: *Tucker v Carruthers* 1941 AD 251; *Neon and Cold Cathode Illuminations (Pty) Ltd v Ephron* 1978 1 SA 463 (A).

95 On remedies for breach of contract, see in general Van der Merwe *et al* 272 *et seq*; Farlam and Hathaway 530 *et seq*; De Wet and Van Wyk 195 *et seq*; Christie 615 *et seq*; Van Rensburg *et al* 250 *et seq.*

96 *Swart v Van der Vyver* 1970 1 SA 633 (A) 643C; Van Rensburg *et al* 285; Van der Merwe *et al* 305; De Wet and Van Wyk 222.

97 *Administrateur, Natal v Edouard* 1990 3 SA 581 (A).

98 *Esso Standard SA (Pty) Ltd v Katz* 1981 1 SA 964 (A); *Swart v Van der Vyver supra* 643.

financial position in which she would have been had there been no breach, or in the position in which she would have been, had the contract been properly performed.[99] Damages are therefore calculated in accordance with the injured party's positive interest.[100] The Apportionment of Damages Act [101] was not intended to apply to actions based on contract and our courts have confirmed this view.[102] In the event of an impending breach of contract a contractant may apply to the court for an interdict to prevent the breach.[103] If a contractant is entitled to cancel the contract,[104] an election must be made by choosing between upholding or cancelling the contract. A contractant is in principle entitled to an order for specific performance but the court has a discretion to refuse the order.[105] Orders for specific performance in case of obligations arising from contracts for the rendering of services are not readily given because of the implications such orders will have for the personal freedom of employers and employees.[106]

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99 Van Rensburg *et al* 295.

100 Van der Merwe *et al* 297; De Wet and Van Wyk 222.

101 Act 34 of 1956.

102 See Neethling et al 153-154; *Barclays Bank v Straw DCO* 1965 2 SA 93; *OK Bazaars (1929) Ltd v Stern & Ekermans* 1976 2 SA 521 (C).

103 *Ibid.*

104 Cancellation is an extraordinary remedy which is only available in special circumstances such as in the case of a material breach or in cases where a right to resile was contracted: Van der Merwe *et al* 287; De Wet and Van Wyk 215.

105 *Haynes v King William's Town Municipality* 1951 2 SA 776 (A) 378-379. The order will be refused where specific performance is impossible or if the debtor is insolvent: *Benson v SA Mutual Life Assurance Society* 1986 1 SA 776 (A) 783.

106 *National Union of Textile Workers v Stag Packings (Pty) Ltd* 1982 4 SA 151 (T); Van der Merwe *et al* 276 *et seq* ; De Wet and Van Wyk 210; Van Rensburg *et al* 288.

2.3 Terms of a contract

Whether an act constitutes a breach of contract depends on the terms of the contract. Express terms are terms agreed to by the parties in a contract, either expressly by words or tacitly by conduct.[107] Implied terms describe the unexpressed provisions of a contract which are imported by law (*ex lege*) without regard to the intention of the parties, or they may consist of terms implied by the facts or circumstances of the case *(ex consensu)*. The *ex lege* implied terms of a contract differ according to the form of contract entered into. Such terms are in fact one of the *naturalia* of the contract which apply automatically if they are not excluded. For instance, in a contract of sale there is an implied guarantee or warranty against latent defects; in a contract of lease there is a similar implied undertaking by the lessor in respect of the absence of defects; and in the case of a contract for services rendered there is an implied term that reasonable care will be taken in providing the service.[108] A term implied *ex consensu* is a term incorporated through the true, but unexpressed intention of the parties, also referred to as "tacit terms".[109] Such a term is usually inferred by the courts from the surrounding circumstances of the contract, adopting the "innocent bystander test" of English law.[110]

Terms are also divided into essential (*essentialia*), natural (*naturalia*) and incidental (*incidentalia*) terms.[111] *Essentialia* are prescribed terms of law that have to form

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107 Christie 147-150; Van der Merwe *et al* 196-200; Van Rensburg *et al* 232-235.

108 See par 2.6.2.2 *infra*.

109 Van Rensburg *et al* 234; Van der Merwe *et al* 196.

110 *Reigate v Union Manufacturing Co (Ramsbottom)* 118 LT 479 483. See also *Alfred McAlpine & Son (Pty) Ltd v Transvaal Provincial Administration* 1974 3 SA 506 (A) 532 for the implementation of the test stated in the *Reigate* decision.

111 Van Rensburg *et al* 231; De Wet and Van Wyk 129; Van der Merwe *et al* 200.

part of an agreement if it is to be classified as a specific contract.[112] *Naturalia* are terms which by law form part of a certain type of contract unless excluded by the parties,[113] and *incidentalia* are terms which the parties stipulate themselves without being prescribed or implied by law.[114] The *naturalia* determine the consequences of any known type of contract. A contract which does not contain the *essentialia* of a known type of contract, is a contract *sui generis*, such as the licensing agreement offered by the producers of software.[115] *Naturalia* may be excluded from a contract by agreement but not the *essentialia*. For example, in a contract of sale the parties may agree to the exclusion of one of the *naturalia* of such a contract, namely the implied guarantee against latent defects.[116]

Exemption or exclusion clauses seeking to exclude or limit contractual liability are frequently employed in the standard form contracts used by the software industry. Such clauses typically contain limited warranty and liability provisions catering for the replacement of defective materials and excluding any liability for loss or damage arising from the use of the software or from any errors, faults or deficiencies in it, whether it was caused by negligence or otherwise.[117]

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112 For instance, in the case of a contract of purchase and sale there must be agreement on the thing (*merx*) sold as well as on the selling price (*pretium*): Van der Merwe *et al* 200.

113 *Cf Videtsky v Liberty Life Insurance Association of Africa Ltd* 1990 1 SA 386 (W); A *Becker & Co (Pty) Ltd v Becker* 1981 3 SA 406 (A); *Essa v Divaris* 1947 1 SA 753 (A).

114 Van der Merwe *et al* 202.

115 See par 2.5.1.2 *infra*.

116 Hosten *et al* 720; De Wet and Van Wyk 335.

117 See appendix IV par (3).

2.4 Standard form contracts

2.4.1 General

The contracting party who suffers loss through the use of an ES amounting to a breach of contract will need to rely on her contract, if one exists, for compensation which is usually found in a claim for damages based on a breach of contract.[118] The normal consequences or remedies of a contract usually provide adequate protection. However, normal consequences can be varied by agreement. Where equal bargaining power exists between the contracting parties, adequate protection against abuses can be ensured by the agreement between the parties. A problem arises in the case of private individuals and small businesses who are forced to accept the use of standard form contracts with clauses that exclude liability or terms of which the contractant has no knowledge.[119] Such contracts are available on a "take it or leave it" - basis and actually negate the "freedom to contract" - doctrine.

A standard form contract[120] is a contract in which the rights and duties of the parties are defined before contracting takes place and the offer is available on a "take it or leave it" - basis. Most software producers make use of standard form contracts in the distribution of their software.[121] This is a universal phenomenon and explains why buyers in South Africa, for example, are frequently bound to the same contracts as buyers in America who are limited to the applicability of, for example, Californian

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118 Van der Merwe *et al* 296 *et seq*. See also par 2.2.2.3 *supra*.

119 Symon 73; Van der Merwe 60-72; Van der Merwe *et al* 225. *Cf Glen Comeragh (Pty) Ltd v Colibri (Pty) Ltd* 1979 3 SA 210 (T); *Western Bank Ltd v Sparta Construction Co* 1975 1 SA 839 (W).

120 Also known as a *contrat d'adhesion*.

121 The computer industry is characterised by extensive use of standard form contracts: Van der Merwe 60; Symon 73-74; Tapper 144-145.

law.[122] The licensing agreement offered by the developer of software always contains some exclusion of liability clause.[123]

The desirability of standard form contracts is a contentious issue among lawyers.[124] On the one hand the doctrine of freedom of contract ensures that courts will not lightly interfere with the contractual provisions agreed to between the parties, however harsh they may be, and on the other hand, it is acknowledged that unnegotiated terms may be abused by contracting parties. The doctrine of freedom of contract is based on the premise that both contracting parties hold a position of equal bargaining strength and that they are quite free to accept or reject any term of the contract. Unfortunately, true equality does not exist in the consumer society of today where the supplier has greater strength in respect of economic resources and knowledge which is in turn reflected in the designing of oppressive terms for the user. The software consumer is forced to accept the presented standard form or must decline to contract. If the consumer does contract, she will ironically be bound to the terms she has "agreed to", however harsh they may be.[125] Protection against unfair terms of contract in foreign jurisdictions have mostly been effected by legislation.[126] International parties to a software contract must take note of the ruling legal systems' legislative measures on exclusion clauses lest they be invalid.[127]

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122 Van der Merwe 60.

123 See par 2.5.1 *infra*.

124 See par 2.4.2.3 *infra*.

125 Symon 75.

126 An example is the *UCTA* of England: see par 2.6.1.3 *infra*.

127 See ch 4 par 4.4.1 *infra*. With regard to exemption clauses in Anglo-American contracts, see par 2.6.1.3 *infra*.

2.4.2 Protection against exemption clauses in South African law

There are two methods used by the South African courts to protect the public from the worst abuses of exemption or exception clauses. The first is by setting limits to permissible clauses, and the second is by interpreting such clauses narrowly.[128]

2.4.2.1 Public policy

Exemption clauses that are against public policy are not recognised by our law and will not be enforced.[129] An exemption clause will be *contra bonos mores* if it necessarily contravenes, or tends to induce contravention of a fundamental principle of justice or of statutory law, or if it is against the public interest.[130] On this basis an exemption from liability for fraud will not be enforced.[131] An exemption clause from liability for negligence is permissible and enforceable.[132] It is uncertain whether the English doctrine of fundamental breach, in terms whereof it is legally impossible to be exempted from the consequences of a fundamental breach irrespective of the common intention of the parties, is applicable in our law.[133] In *Government of the Republic of South Africa (Department of Industries) v Fibre*

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128 Christie 212; Van der Merwe *et al* 226.

129 *Morrison v Angelo Deep Gold Mines Ltd* 1905 TS 775; *Wells v SA Alumenite Co* 1927 AD 69.

130 Christie 213; Van der Merwe *et al* 115; De Wet and Van Wyk 48.

131 *Ibid.*

132 *Central SAR v Adlington & Co* 1906 TS 964; *SAR & H v Conradie* 1922 AD 137; *Essa v Divaris* 1947 1 SA 753 (A); *SAR & H v Lyle Shipping Co Ltd* 1958 3 SA 416 (A).

133 In *Wijtenburg Holdings t/a Flamingo Dry Cleaners v Bobroff* 1970 4 SA 197 (T) the court accepted this doctrine as part of our law but in *Galloon v Modern Burglar Alarms (Pty) Ltd* 1973 3 SA 647 (C) and *Micor Shipping (Pty) Ltd v Treger Golf and Sports (Pty) Ltd* 1977 2 SA 709 (W) this view was rejected.

Spinners & Weavers (Pty) Ltd [134] the court doubted the acceptance of this doctrine in South African law and held that an exemption clause, like any other term or condition of a contract, must be construed in the light of the provisions of a contract as a whole. This is called the construction approach and it appears from the *dicta* in *Wells v SA Alumenite Co*[135] that a party can validly be exempted from even an intentional fundamental breach of contract provided it is not fraudulent.

2.4.2.2 Interpretation of exemption clauses

Exemption clauses are interpreted narrowly so as to confine them within reasonable bounds. Those clauses which do not set out the legal grounds for liability from which exemption is granted are subject to especially narrow interpretation.[136] In such cases the nature of the contract will firstly be examined for the purpose of deciding what legal grounds of liability would have existed in the absence of an exemption clause. The clause will then be interpreted to exempt a party from the ground of liability for which she would otherwise have been liable in the least degree of blameworthiness.[137] The wording of the clause and the surrounding circumstances are also investigated to ascertain whether the clause reveals a common intention of the parties to be protected from liability arising during the performance of contractual obligations only, or also from additional risks.[138]

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134 1977 2 SA 325 (D) .

135 1927 AD 69 at 73: Christie 212-221.

136 Christie 219; Van der Merwe *et al* 214.

137 *Essa v Divaris* 1947 1 SA 753 (A). *Cf* Christie *op cit* 219 and the authorities quoted in fn 42.

138 *Weinberg v Olivier* 1943 AD 181; *Hall-Thermotank Natal (Pty) Ltd v Hardman* 1968 4 SA 818 (D); *Ornelas v Andrew's Cafe* 1980 1 SA 378 (W).

2.4.2.3 Control of unconscionable contract terms

The SALC conducted an enquiry into the control of unconscionable contract terms in 1984.[139] The result was a proposed system of judicial and preventive control of contractual freedom according to the principle of good faith.[140] The proposals concluded that there should be a system enabling the courts by statute to perform their specific duty to control misuse of contractual freedom. The basis for such control is the requirement of "good faith" in all phases of contractual relationships. A general criterion of "good faith" rather than "public policy" is offered because *inter alia*, "good faith" is the internationally and locally acknowledged term by which the ethical requirement set by public policy is expressed. It was pointed out that good faith represents the collective experience of our legal culture as well as that of comparable legal systems. The test for good faith should be applied in terms of a wide and general criterion, assisted by open-ended practical guidelines.[141] The courts should be empowered by legislation to refuse to enforce unfair contracts or to change such contracts before enforcing them. Preventative control can be facilitated through empowering an existing body such as the Harmful Business Practices Committee to reach enforceable negotiated settlements, to promote self-control and to give interim relief. This proposed system was further refined in 1990[142] and resulted in draft legislation.[143]

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139 Project 47: Van der Walt (1) 147.

140 For an overview of the enquiry, see Van der Walt *ibid.* *Cf* also Eiselen 1988 *De Jure* 251-264, 1989 *De Jure* 44-54 and 1989 *THRHR* 516-539; Van der Walt 1991 *THRHR* 367-387 and 1993 *THRHR* 65-82.

141 The idea is that contractual justice can only be attained alongside individual autonomy which includes the optimistic view that individuals will act for their own benefit and for the good of the community if left to themselves: Van der Walt 1991 *THRHR* 377.

142 Van der Walt 1993 *THRHR* 80.

143 Bill on the Control of Contract Terms, 1991.

The proposed legislation has been favourably received by South African commentators: according to Van der Walt[144], any steps taken to augment contractual justice through implementing a system of proper control over the freedom of contract is compatible with a declaration of human rights.[145] Van Aswegen [146] points out that the changed social and economic realities of our post-apartheid era have made current contract doctrine, based on party autonomy and the principle of consensualism in a free market on an equal footing, virtually obsolete. Some transformation of our contract law is, therefore, necessary to ensure substantive justice between contracting parties.[147] It is submitted that the sooner the proposed measures are instituted, the better.

2.4.2.4 Conclusion

In most cases of standard software use, an acquisition contract excluding contractual and delictual liability, will only exist between the injured user and the supplier, not between the user and the developer.[148] A third party who is injured through the use of an ES is not affected by such a contractual term.[149] A licensing agreement may have been concluded though, between the injured user and the developer, excluding the contractual and delictual delictual liability (specifically, product liability) of the developer. The validity of the exemption clause will then have to be determined

144 1993 *THRHR* 384.

145 Most declarations of human rights protect principles of freedom of contract in a direct and indirect manner for example the freedom to work, the freedom to form and join unions, the right to own property and the freedom to choose a place to live.

146 Van Aswegen 1994 *THRHR* 448 458.

147 *Ibid.*

148 See ch 2 par 10.2.3 *supra*.

149 See ch 2 par 10.2.2 *supra*.

according to the principles already discussed.[150] Most standard software packages make use of shrink-wrap licenses which, as will be pointed out, only constitute a valid contract if they meet with very specific requirements.[151] Where a valid licensing agreement has been concluded between the parties, it is possible that any exclusion of liability may be invalid, either because it is outlawed by the foreign legal system regulating the contract, or because it is held to be contrary to public policy in terms of South African law.[152] If the latter does not apply, it may be that the exclusion of liability is valid and the injured party has no action for damages.[153]

2.5 Software licensing

A licensing contract is an agreement between the owner of intellectual property and a user in terms whereof the user may use the copyrighted product against payment of a licensing fee.[154] It may be concluded through a shrink-wrap agreement or by completing a registration card when the software is acquired. The function of a licensing agreement is to describe the rights of the copyright holder and to create a contractual relationship between the software developer and the user which would not usually arise when the software is acquired from a supplier. In this way the developers have an opportunity to exclude their delictual or product liability.[155]

According to Tapper[156] and Reed,[157] software is generally licensed rather than

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150 Par 2.4.2 *supra*.

151 See par 2.5.2 *infra*.

152 See par 2.4.2 *supra*.

153 See also par 3.3.3.4 *infra* with regard to the *actio de non petendo*.

154 Eiselen 21; Tapper 146; Franken *et al* 66.

155 These exclusion clauses usually form part of a standard form contract: see par 2.4 *supra*.

156 At 180.

sold outright.[158] The reason for this dates back to the time when software was first distributed and the subsistence of intellectual property rights in software was not yet acknowledged, with the result that software developers could only protect their interests via contractual restrictions on the use of their product.[159] Although it is now established law that copyright does subsist in software,[160] a licensing agreement may still be required to regulate more precisely the measures of protection, the rights of the copyright holder and greater restrictions on the user.[161] At the same time, the licensing agreement creates a contractual relationship between the developer of the software and the customer-user, which would normally be absent in cases where the software is acquired from a supplier. In this way developers have the opportunity to exclude their possible delictual or product liability.[162] The licensing agreement regulating the use of copyright material, should not be confused with the acquisition agreement which, according to the circumstances, may constitute a contract of sale, or hire of goods, or for the letting and hiring of work,[163] or the licensing of software as a manner of acquisition.[164] The licensing contract entered

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157 Reed(2) 46.

158 On software licensing in general, see Tapper 180-184; Reed(2) 46-49; Van der Merwe 61-67; Pistorius 1995 *SA Merc LJ* 1-19.

159 Reed(2) *ibid.*

160 S 1(1) of the Copyright Amendment Act 125 of 1992: see ch 4 par 5.3 *infra*. In terms of European Union (EU) Directive 250 of 1991, member States of the EU are required to protect the copyright of computer programs in their national legislation as "literary works".

161 Tapper 180; Reed(2) 46; Maré 102-103.

162 In the absence of a licensing agreement between the developer and the user, a contractual nexus will normally not exist between these two parties, as the software is directly acquired from the supplier. Therefore, the developer runs the risk of incurring delictual liability in the event of damage caused by a defective product: see par 3.3.2.3 *infra*.

163 *Locatio conductio operis.*

164 See par 2.6.2.1 *infra*.

into will, in most cases, consist of the developer's standard contract in this regard.[165] In the case of packaged standard software the terms will be non-negotiable but in the case of custom software, there is a possibility of negotiating about the terms of the contract. Shrink-wrap licensing agreements, a type of licensing agreement peculiar to standard mass-packaged software, raise the question of enforceability as it is uncertain whether the parties have reached consensus on the conclusion of the contract.[166]

2.5.1 The nature of a licensing agreement

2.5.1.1 Anglo-American law

In Anglo-American law it is necessary to determine whether such a licence is a sale which is to be governed by the law of sale of goods.[167] A software licence normally only grants the right to use the software on a single computer at a single location.[168] The other characteristic of such a licence is that it contains a clause restricting the user from transferring the software to any third party.[169] The argument is then that a licence, which is actually only the conferring of a right[170] to

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165 See par 2.4 *supra*.

166 See par 2.5.2 *infra*.

167 Eg the Sale of Goods Act (SGA) in the UK and the Uniform Commercial Code (UCC) in the USA: see par 2.6.1 *infra*.

168 In the case where a network or many computers are used special provision can be made through the use of a "site licence" which permits the licencee to use the software on any number of computers or sites: Reed(2) 48; Van der Merwe 63.

169 See appendix V for an example of a licence statement appended to an ES produced by Capper and Susskind in England: *Latent Damage Law - The Expert System*: Capper and Susskind 1.

170 Reed(2) 47 defines a licence as "permission to do something that would otherwise be unlawful."

use a copy of the program, is not a sale because full ownership does not pass.[171] Although the transference of full ownership is an essential element of a contract of sale,[172] it is always subject to the law of intellectual property rights, as for example in the case of a book or a compact disk (cd), which if sold gets a new owner but the **copyright** of the authors still subsists.[173] In the same way while the purchaser of software usually[174] becomes the owner of the physical disks upon which the software is copied their use is restricted through the granting of a licence. Capper and Susskind[175] are of the opinion that there is in functional terms[176], no need for the legal system to differentiate between the supply of physical goods and the supply of copies of software. According to them[177], the "novel concept of software" does not alter the fact that the purchaser of software receives something from the supplier just as much as a purchaser of, for instance, a car does and that the law (in the absence of a contrary agreement between the parties) should then be entitled to apply the normal obligations regarding fitness for purpose and quality in the case of goods, to software as well. They argue that a car which is developed from a standard product line is a form of a copy of the manufacturer's design and, therefore, it is no less a copy of an original than distributed software is such a copy. The purchaser of the car does not become the owner of the design of that car any more than the purchaser of software becomes the "owner" of that software. This amounts

171 See appendix V par (4) under the heading "Title" especially the last sentence: "You do not own any copy of this Software."

172 *Rowland v Divall* [1923] 2 KB 500.

173 Reed(2) 48.

174 It may be that the disks are not purchased but hired in terms of a definite contract of lease, whereupon ownership of the disks will not pass: Reed(2) 48.

175 At 121.

176 As opposed to legal terms.

177 At 121.

to the same argument as that of Reed[178] who points out that the fact that software is not sold but licensed does not alter the underlying nature of the contract for the supply of the software.[179] Viewed in this way, there are actually two contracts between the licensor and the licensee: (a) The contract for the supply of the software which will be a contract of sale if ownership of the physical media passes to the licensee and a hiring if it does not, and (b) the licence agreement.[180]

In practice, a signed written agreement, setting out the conditions of sale or service including the licensing thereof, will be entered into with a software house or other software specialist in the case of custom software. In the case of standard software a written contract of supply does not usually exist and the licensing terms are stipulated in a shrink-wrap license[181] which is a standard contract purporting to establish a contract between the software developer and the user. The nature and enforceability of this particular type of licensing agreement is discussed separately.[182]

2.5.1.2 South African law

The licensing contract under which software is usually supplied, is unknown to the South African common law and has no *naturalia* which will determine its scope.[183] As such it is an innominate contract to which the general principles of contract law

178 Reed(2) 44.

179 *Eurodynamic Systems plc v General Automation Ltd* [1988] QB 5. See also Pistorius 1993 *SA Merc LJ* 12.

180 Eiselen 31; Maré 104.

181 See par 2.5.2 *infra*.

182 Par 2.5.2.2 *infra*.

183 Eiselen 34; Pistorius 1993 *SA Merc LJ* 10.

is applicable.[184] Whether a licensing agreement is concluded or not, the provisions of the Copyright Act[185] applies in any case to the copyright of software.[186] In terms of this Act a legitimate user is entitled to make back-up copies for recovery purposes.[187]

2.5.2 Shrink-wrap licensing

2.5.2.1 Definition

Shrinkwrap-licensing is a technique used by software developers to constitute a direct licensing agreement between themselves and the user in situations where a signed licensing agreement is impossible.[188] A typical shrink-wrap licensing agreement reads as follows:[189]

> **READ THIS AGREEMENT BEFORE YOU OPEN THE SEALED DISKETTE PACKAGE. BY OPENING THE SEALED PACKAGE OR USING THE SOFTWARE YOU ACCEPT THE TERMS OF THIS LICENCE AGREEMENT.**
>
> (If you do not accept these terms return the unopened diskette package to your dealer with your receipt for a full refund.)

These types of agreements are normally used in the case of packaged software which is mass-marketed and -distributed through various outlets without the

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184 Maré 19; Pistorius 1993 *SA Merc LJ* 3.

185 Act 98 of 1978.

186 S 1(1) as amended by the Copyright Amendment Act 125 of 1992: see ch 4 par 5.3 *infra*.

187 S 11B(1).

188 See in general Reed(2) 57-59; Tapper 145; Van der Merwe 65-66.

189 Van der Merwe 65. See also the provisions of par (1) of appendix V which contains a facsimile of the licensing agreement appended to the disks containing *Latent Damage Law - The Expert System*: Capper and Susskind 1.

opportunity of negotiations between the parties.[190] Their purpose is to protect the copyright enjoyed by software developers, to regulate the use of computer programs on an internationally uniform basis, and to deter piracy.[191] The terms of the shrink-wrap licence agreement are usually visible through clear plastic film wrapped around the software package, thus shrink-wrapped, which has to be torn open. Other terms used include "tear-me-open", "box-top", and "blister-pack" agreements.[192] It is assumed that by opening the seals of the package the customer accepts and acknowledges the terms of the contract.[193] The terms for licensing can also be contained in the software program itself, appearing on screen after installation of the program. In such a case it is suggested that activation of the program itself will constitute acceptance by the user of the relevant conditions.[194]

2.5.2.2 Enforceability

The enforceability of the agreement by the licensor is still uncertain as this is a bilateral contract which actually requires mutual communicated acceptance and consensus on all terms before the conclusion of the contract.[195] In the United States and the United Kingdom the licensing agreement will be validly concluded if the customer-user acquired the software with full knowledge of the appended licensing terms.[196] If the user was unaware of such terms, no licence agreement

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190 Pistorius 1993 *SA Merc LJ* 1.

191 *Ibid.*

192 Pistorius 1993 *SA Merc LJ* 2.

193 Reed(2) 57; Tapper 143; Van der Merwe 65. See also appendix V par (1) and (8).

194 Maré 12.

195 Reed(2) 58-59; Tapper 144-146; Stern 51. See also Pistorius 1993 *SA Merc LJ* 2, especially the numerous references in fn 46 to articles on this contentious issue in Anglo-American law.

196 Tapper 145.

is concluded. In a Canadian case[197] the court held that as the shrink-wrap licence of a computer program was not visible or known to the purchaser at the time of purchasing the program, there was no notice of the conditions of sale which could bind him.[198] It is possible that the American courts will construe the licensing agreement as a sale because of the specific terms which provide for the use of the software for an unlimited period against full payment in advance.[199] In the state of Louisiana, specific legislation was enacted to authorise shrink-wrap licences.[200]

In South African law the position is as follows: If proper notice of such inclusion is given before conclusion of the contract, the terms will become part of the contract even though one party is unaware of the contents of the terms.[201] In this regard the practical rules, adopted by our courts[202] from English cases[203] relating to the so-called "ticket cases", are relevant.[204] These are cases in which the supplier furnishes the customer with a document (usually printed on the back of a ticket or receipt) in the form of a ticket which is not intended to be signed, containing the

197 *North American Systemshops Inc v King* 68 ALR 145 (Can QB 1989).

198 Pistorius *SA Merc LJ* 4.

199 Tapper 146.

200 The Software License Enforcement Act, 1984. However, see the case of *Vault Corporation v Quaid Software Ltd* (1987) 655 F Supp 750 (ED La) in which this Act was found to be in conflict with federal copyright law and therefore unenforceable.

201 Maré 24-26; Eiselen 13.

202 See eg *Kings Car Hire (Pty) Ltd v Wakeling* 1970 4 SA 640 (N); *Bok Clothing Manufacturer's (Pty) Ltd v Lady Land (Pty) Ltd* 1982 2 SA 565 (C); *Slabbert, Verster & Malherbe (Noord Vrystaat) (Edms) Bpk v Gellie Slaghuise (Edms) Bpk* 1984 1 SA 491 (O); *Van Deventer v Louw 1980* 4 SA 105 (O); *Micor Shipping (Pty) Ltd v Treger Golf & Sports* (Pty) Ltd 1977 2 SA 709 (W).

203 *Parker v South Eastern Railways* [1877] QB 768; *Richardson Spence & Co v Rowntree* [1894] AC 217.

204 See in general Christie 206; Van der Merwe *et al* 217.

terms and conditions according to which the supplier will do business.[205] The rules are intended to prove that the customer is bound by the contract where the latter denies awareness of the terms embodied in the ticket and there is no proof to the contrary. According to Pistorius[206] a valid and enforceable contract is concluded in the case of a shrink-wrap licensing agreement if the requirements of offer and acceptance have been complied with.[207] If the user read the licence she is bound by the terms and no further enquiry is needed. If there is no proof that she read the document, she will only be bound to the contract if it can be proved that the supplier did all that was necessary or reasonably possible to draw the attention of the reasonable user to the terms of the agreement, or that the document itself is conspicuous enough to draw the reasonable user's attention to its terms.[208] The danger of shrink-wrap licences lies in the inclusion of unfair terms which the user is deemed to have accepted. As South Africa has no specific principles regarding shrink-wrap agreements, nor any general statute protecting contractants against unfair or harsh contract terms, the courts have to be relied upon for legal development in this area. This aspect has already been discussed in regard to standard form contracts.[209]

2.6 Software acquisition

2.6.1 Anglo-American law

In Anglo-American law the determination of liability, whether grounded in tort or

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205 Pistorius 1993 *SA Merc LJ* 4. See also the *caveat subscriptor* cases: *Kings Car Hire (Pty) Ltd v Wakeling supra*.

206 1993 *SA Merc LJ* 6.

207 The question remains whether a meeting of minds has taken place: Pistorius 1993 *SA Merc LJ* 5.

208 Pistorius *SA Merc LJ* 5.

209 See par 2.4.2 *supra*.

contract, resulting from personal or economic injury caused by the use of ES's, hinges on the crucial question of whether these types of computer programs are regarded as products (goods) or services.[210] With regard to contractual liability arising from a breach of contract, the applicability of legislation regulating the sale of goods and services[211] is dependent on the classification of ES's as "goods" or "services".[212] In terms of these statutes a much stricter duty is placed on the supplier of goods than upon a supplier of services.[213]

2.6.1.1 Products or services

(a) The nature of software in general

Before ES's can be classified into products or services it must be decided what the legal nature of software is in general. In this regard the two distinctions drawn previously[214] in software, one **technical** and the other **commercial**, are important.[215] In terms of the technical distinction in software, ES's are a subset of application software which may, in terms of the commercial distinction, be acquired

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210 See Tapper 181; Reed(2) 43-46 and 66-71; Turley 1988 *CLJ* 455; Hagendorf 1990 *CLJ* 47; Reed 1987 *CL&P* 12; Zeide and Liebowitz 1987 *IEEE Expert* 19; Davies 1993 *CL&P* 99; Reed 1988 *CL&P* 149; Tuthill 1991 *AI Expert* 45; Cole 1990 *CLJ* 127; Triaille 1993 *CLSR* 214; Wolpert 1993 *DCJ* 519; Schmal 1992 *LT* 1; Frank Spring 1988 *AI Magazine* 63 (Part I) and Summer 1988 109 (Part II); Gill 1986 *HTLJ* 483 and Birnbaum 1988 *CLJ* 135.

211 The sale of goods and services is regulated in the USA by the UCC adopted in every state except Louisiana, and in the UK by the SGA, the Supply of Goods and Services Act (SGSA) of 1982 and the Supply of Goods (Implied Terms) Act of 1973: see par 2.6.1.3 *infra*.

212 See Reed(2) 67; Tapper 181; Capper and Susskind 124-128.

213 The consequence of the particular contract being one of sale of goods or one for services is that there are different regimes of implied conditions and warranties that apply: see par 2.6.1.2 *infra*.

214 See ch 2 par 10.1 *supra*.

215 See ch 2 par 10.1 *supra*.

as standard, custom or customised software.[216] The latter distinctions refer to the commercial distinction in software which consists mainly of **standard or package software** and **custom or bespoke software**.[217] As stated before,[218] the former is a standard product meeting the requirements of a large number of users and the latter is custom made to meet the particular requirements of a specific user. Between these two main types of software it is also possible for a **hybrid form** of software to exist; this occurs where a standard package is altered by the software producer to fit the user's needs more closely, a process called "customisation".[219]

Tapper[220] points out that the practice followed by the computer industry in the United States before the days of "unbundling" was to supply the hardware complete with the necessary operation systems software as a unit available at one undistinguishable price. Since the 1970's "unbundling" has taken place whereby the programs(software) were separated from the hardware although a sale of hardware inclusive of standard software still occurs.[221] In such a case the sale has been held to be a sale of **goods** both in the United Kingdom[222] as well as the United States.[223]

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216 *Ibid.*

217 See ch 2 par 10.1.1 *supra.*

218 Ch 2 par 10.1 *supra.*

219 See ch 2 par 10.1.1 *supra.*

220 At 147.

221 Reed(2) 44.

222 *Toby Constructions Products Pty Ltd v Computa Bar (Sales) Pty Ltd* [1983] 2 NSWLR 48; *Micron Computer Systems Ltd v Wang (UK) Ltd* (1990) unreported 9 May (QBD).

223 *Triangle Underwriters, Inc v Honeywell, Inc* (1978) 457 F Supp 765 (EDNY), (1979) 604 F 2d 737 (2d Cir); *Dreier Co, Inc v Unitrix Corp* (1986) 218 NJ Super 260, 527 A 2d 875.

According to Turley,[224] the American courts treat software in the same way as other commercial transactions and the same distinction between customised and standard goods in general is also applied to software. Therefore, a computer program that is mass produced and marketed, in other words standard software, is likely to be classified as a **product** and the transaction defined as a "sale of goods" within the meaning of article 2 of the UCC,[225] whereas a program that is custom made for a specific user is more likely to be classified as the provision of a **service** which is governed by common law.[226] It is interesting to note that in a few cases American courts have regarded software transactions as a "transaction in goods" irrespective of whether the software consist of a standard package or custom made or whether it includes the hardware.[227] The same has been held with regard to licensing agreements: the UCC has been applied either directly or by way of analogy.[228]

English courts have also taken into account the substance of the software contract: If it is for the production of something which is to be sold to the consumer, then it is a **sale of goods**, but if it is for the exercising of skill and labour although some materials (for example the disks containing the software) are also transferred, it is a **contract of services**.[229] Although there are no reported English cases directly defining computer programs as "goods", Reed[230] believes that the following

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224 1988 *CLJ* 459.

225 For purposes of contract law, s 2-105(1) of the UCC defines goods as "all things....which are movable at the time of identification of contract of sale".

226 Turley 1988 *CLJ* 459; Tapper 181-182.

227 *Hollingsworth v The Software House Inc* (1986) 513 NE 2d 1372 (Oh); *Harford Mutual Insurance Co v Seibels, Bruce & Co* (1984) 579 F Supp 135 (D Md); *Schroders Inc v Hogan Systems Inc* (1987) 4 UCC Rep 2d 1397 (NY).

228 *Samuel Black Co. v Burroughs Corp.* (1981) 33 UCC Rep 954 (D Mass). See also Tapper 181-182; Turley 1988 *CLJ* 458.

229 *Robinson v Graves* [1935] 1 KB 579; *Marcel Furriers Ltd v Tapper* [1953] 1 WLR 49.

230 At 44.

statement made in *Eurodynamics Systems plc v General Automation Ltd*[231] is an indication that English courts do regard it as such:

> Although the ideas and concepts involved in software remained intellectual property, the reality of the transaction is that there has been a transfer of a product.

If title to the physical medium on which the software is supplied passes to the purchaser, it is a contract of sale of goods and if not, it is a contract of hire of goods.[232] In the case of *Cox v Riley*[233] the defendant was convicted of criminal damage of a magnetic card after he had erased the programs on it. The court, by rejecting the defendant's argument that he had not damaged the card itself, and accepting that the software recorded on it is **property** for the purposes of the Criminal Damage Act 1971, in effect found that the software is not merely information, but **goods**.[234]

Another argument in determining the legal nature of software is that a computer program is not "goods" because it consists of pure information[235] which is intangible and therefore not movable, especially in the case where there is no hard copy of the information transmitted to the customer and it is simply passed along a telephone line.[236] In the case where the transaction does involve the transmission of physical

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231 *Supra.*

232 Reed(2) 70.

233 83 Cr App R 54 QBD (1986).

234 See also the English court of Appeal's decision in *St Alban's DC v ICL* reported in the Times of 14 August in which the court found *obiter* that computer software is generally "goods": see Colbey 1996 *Solicitors Journal* 1025.

235 See ch 2 par 5.1 *supra.*

236 Tapper 181; Reed(2) 43. *Contra* König 100-101 who holds the view that the transmission method of software makes no difference to the corporeality of software as there is always a hard copy of the software in existence at one end. However, see ch 5 part I par B 2.5 *infra* for a discussion of tortious liability caused by the use of information products.

objects like disks, tapes, books, etcetera it is then argued that because the value of the medium on which the program exists is so insignificant compared to its intellectual content, these physical objects cannot determine the nature of the transaction.[237] This would mean that only the physical medium on which software is supplied constitutes "goods" and the software recorded on it does not because it is merely information.[238] Tapper,[239] as well as Reed,[240] find these arguments unconvincing and also irreconcilable with the treatment of books and works of art. A book is undisputedly tangible property which constitutes "goods" in legal terms, notwithstanding the fact that its major value lies in the writing, and not in the book. Therefore, software embodied in a physical medium is a good or a product.[241]

(b) The nature of ES software

ES's that clearly fall within the ambit of a product or a service will be classified accordingly. Difficulty arises, however, when ES's that cloud the distinction between a product and a service are analyzed in the above context: products are typically manufactured items like soda bottles and motorcars produced by companies who are in such line of business. Professional services are functions performed by people like doctors, architects, engineers and lawyers who are not ordinarily held to a strict

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237 Capper and Susskind 120 point out that the disks could be seen as merely the high technology version of a cardboard box in which the real product is packaged. Fortunately English law has already dealt with this argument by attaching the liability of the supplier to all goods supplied irrespective of their primary contractual purpose: Reed (2) 43.

238 Reed(2) 70.

239 At 181.

240 At 43.

241 However, see Westerdijk 78 who distinguishes between the tangible medium of software, which is a product, and the intangible information, the software itself, which is sometimes a product and sometimes not: see part II par 9.1.3 *infra*.

liability standard, but rather to a negligence standard.[242] Contractors who supply goods or services have in essence a quality or fitness obligation whereas professionals only have the obligation to exercise reasonable care and skill in the rendering of their services.[243] How should a mass produced ES that operates to perform such a professional service offered by a human expert be classified? Turley[244] offers a solution whereby one looks at what the ES provides and classifies it accordingly: **if the ES provides a product, it is a product and if it provides a service, it is a service.** In the United States the "predominant feature" test is applied to reach a conclusion.[245] This means that a contract involving aspects of sale and service is classified according to the predominant aspect of the contract.[246]

In conclusion it looks as though the courts will have to decide on a case by case analysis whether each individual ES is a product (goods) or a service.[247] In this regard it seems that software contracts in the United States are more readily held to be contracts for the sale of goods, irrespective of the commercial nature or the tangibility of the software and its medium, than in England where a strict adherence to the nature of the transaction and the tangibility of the software determines the nature of software contracts.[248]

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242 Tapper 265.

243 Capper and Susskind 103.

244 1988 *CLJ* 458.

245 *RRX Industries, Inc. v Lab-Con, Inc* (1985) 772 F 2nd 543 (9th Cir).

246 *Compu-Med Systems, Inc. v Cincom Systems, Inc* No 83 Civ 8729 (unpublished decision) cited by Turley 1988 *CLJ* 459. See also ch 5 part I par B 1.2 *infra*.

247 Turley 1988 *CLJ* 477.

248 Tapper 181 *et seq*.

2.6.1.2 Effect of nature of contract on liability

According to the doctrine of privity of contract in common law there can only be a claim in contract if there is a contractual relationship between the plaintiff and the defendant.[249] Contractual liability of the producers and users, arising from the use of an ES as defined in this study, stems from a breach of contract.[250] One of the obligations created by entering into the contract is the duty to take reasonable care. The producer who fails to exercise the degree of care in producing software that a reasonable man with the same expertise in the same position would have done, will be in breach of the contract. The same applies to the software user who, in using the ES as a tool during the rendering of services to another, fails to take the same care as the reasonable user in the same position would have done.

As was seen above, the commercial distinction between custom and standard software, the characteristics of the specific ES in question, and public policy reasons may result in different legal classifications of ES's which in turn may lead to different legal regimes governing the contracts for their supply.[251] In the case of a custom made ES, a software development contract will exist between the producers and the users which will be classified as the rendering of a service, since the transfer of the physical components is subsidiary to the main purpose of the contract, namely the design of unique software.[252] In the case of a standard ES which is mass produced and distributed, a contract for the supply of goods will exist between the producers and the user which is classified as a sale or lease of goods. ES's that perform professional services, either as an aid to a professional[253] or as the direct rendering

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249 Tapper 229.

250 *Ibid.*

251 Par 2.6.1.1 *supra.*

252 Reed(2) 67.

253 For example the **Intelligent Assistant** identified in ch 1 par 1.1 *supra.*

of services[254] to a member of the public, can be classified as a product or a service depending on the prevailing policy considerations followed by the court.[255] Contracting parties may also expressly stipulate the nature of the transaction in their contract. There may also be different contracts in existence between the injured parties on the one hand and the producers and users on the other hand.[256] The main difference between a contract for services and a contract for the supply of goods is that in the former it is implied that **reasonable skill and care** will be used (thus a negligence standard) and in the latter that the result will be **fit for a particular purpose and meet a certain standard of quality** (thus a strict liability standard).[257] Therefore, in the case of breach of contract arising from breach of these warranties, the burden of proof resting on the plaintiff will be easier disposed of in the case of a software contract consisting of a sale of goods, than in one consisting of the rendering of services.[258]

2.6.1.3 Specific acquisition contracts

(a) Contracts for the sale or lease of goods or services

The position in the United Kingdom

In the United Kingdom the SGA confers on the supplier of goods a duty to supply goods that comply with their description,[259] and are merchantable[260] and

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254 For example the **Self-Help System** identified in ch 1 par 1.1 *supra*.

255 Reed(2) 69; Tapper 182.

256 See ch 2 par 10.2 *supra*.

257 Tapper 256; Reed(2) 67-68.

258 See par 2.6.1.3 *infra*.

259 S 13(1).

260 S 14(2).

reasonably fit for their common or specific purpose[261] which is made known to the purchaser at the time of sale.[262] In a contract of lease the same terms are applied through the application of the SGSA.[263] These are statutory implied terms of contract which may lead to breach of contract if not complied with. These terms are also applicable to software.[264] Liability for breach of these and other terms can be excluded in a contract subject to the legal controls found in the common law and in the UCTA. In terms of the common law an exclusion clause is only valid if it is contractually binding on the buyer as in the case of a written and signed agreement.[265] In terms of the UCTA though, it is impossible to exclude these terms *re* the quality, fitness for purpose and description in the event of a **consumer** sale or hire.[266] A buyer is a consumer if she does not buy in the course of a business but from somebody that does, and the goods are of a type normally supplied for private use or consumption.[267] In a business transaction, however, these implied terms may be excluded if it is reasonable to do so.[268] The burden of proof with regard to the reasonableness of the clause is on the person relying on it.[269] The test of reasonableness provides that it must have been fair and reasonable to include

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261 S 14(3).

262 Reed(2) 67.

263 Ss 8 and 9.

264 In the case of *Saphena Computing Ltd v Allied Collection Agencies Ltd* [1988] QB 59 it was decided by the recorder that it was an implied term of each contract for the supply of software that it would be reasonably fit for any purpose that was communicated to the purchaser.

265 Reed(2) 36.

266 S 6(2). Reed(2) 55.

267 S 12.

268 Ss 6(3) and 7(4).

269 *Phillips Products Ltd v Hyland* [1987] 1 WLR 659.

the clause at the time of contracting[270] while taking into account the factors set out in schedule 2 of the Act.[271] In this regard it has been held that a limitation of liability is more reasonable than a complete exclusion.[272] The ability of a party to insure against the loss has also been taken into consideration by the English courts.[273] Because the effect of standard exclusions differs from legal system to legal system, it is essential for contracting parties to obtain advice in this regard before agreeing to a specific choice of law clause.[274]

There can also be express warranties of quality in a contract; these usually cover the extent to which the product conforms with the user requirements specification, and guarantee that physical defects in the software medium will be corrected (usually by replacing them if they are sent back within a certain time period).[275] A warranty may also be limited to a specified time after which any defects in the software may be covered by a software maintenance agreement. Express provisions that impose lesser obligations on a supplier than those imposed under the SGA, and which are stated to be in lieu of all other rights, will amount to an exclusion clause subject to the provisions of the UCTA.[276] In considering the term of merchantable quality, the inevitability of programming errors or "bugs" has been taken into account by the

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270 S 11(1).

271 These include the strength of the parties' bargaining power, knowledge of the clause on the part of the buyer, whether it was reasonable to expect the condition to be complied with, etc.

272 *George Mitchell (Chesterhall) Ltd v Finney Lock Seeds Ltd* [1983] 2 AC 803.

273 *Ibid.* The main reason for finding an exclusion clause unreasonable in this case was the fact that the seller could easily insure against loss caused by a defect in the product, and that insurance would add less than 1 % to the cost of his products.

274 See ch 4 par 4.4.1 *infra*.

275 See appendix V par 5.

276 Reed(2) 71.

courts,[277] with the result that programs that are reasonably fit for their purpose may contain bugs that do not amount to a breach of contract. It is also unlikely that standard package software will meet all the requirements of the user as it is not designed with any particular user in mind. In the case of bespoke software, however, it is more reasonable to expect that the software will comply with the requirements of the user. Software licences are mostly in written form and attempt to exclude or limit the operation of implied conditions and warranties.[278]

The position in the United States

The UCC provides two important implied warranties in a contract of sale of goods: the warranty of merchantibility[279] and the warranty of fitness for a specific purpose.[280] In terms of the first warranty an obligation is imposed on the merchant of goods to provide goods that can pass without objection in the trade and are fit for the purposes for which they are to be used.[281] In terms of the second warranty the vendor must at the time of contracting be aware of the purpose for which the goods are required and that the buyer is relying on the skill of the vendor to provide suitable goods.[282] Turley[283] states that this knowledge will always be present in the case of a sale of an ES, as the use in the case of a purchase of a MES[284] by a doctor for example, will be obvious to all. Both these warranties may be excluded in contracts if general

277 *Eurodynamics Systems plc v General Automation Ltd supra; Saphena Computing Ltd v Allied Collection Agencies Ltd supra.*

278 See appendix V par (5) for an example of such an exclusion clause.

279 S 2-314.

280 S 2-315.

281 Turley 1988 *CLJ* 469.

282 *Ibid.*

283 1988 *CLJ* 468.

284 See ch 2 par 4.2 *supra*.

language in conspicious writing is used.[285] However, courts may refuse to enforce any clause of a contract which is found to be unconscionable.[286]

(b) Software development contracts

In the case of software development contracts the parties usually contract for the provision of a service consisting of the production of software to the customer's specific requirements. The position in terms of the SGSA in the United Kingdom, and the common law principles relating to a contract of service in the United States, are basically the same.[287] Apart from any express terms, the SGSA implies into the contract a term that the supplier will take **reasonable skill and care** in providing the service, and that any materials supplied must be **fit for their purpose and of merchantable quality**.[288] In terms of common law the position is the same.[289] This means that there is an obligation on the software producers to take reasonable care to ensure that the software performs the functions specified by the client, together with any other functions necessary for the effective operation of the software.[290] Liability for breach of this implied term as well as other terms of a standard form contract can only be excluded if the exclusion passes the test of reasonableness in terms of section 11 of the UCTA.[291]

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285 S 2-316(2) UCC.

286 S 2-302.

287 Tapper 198; Reed(2) 67.

288 S 13.

289 Tapper 198.

290 Reed(2) 67.

291 Ss 2 and 3. Reed(2) 55 further points out that ss 2 and 3 of the UCTA apply to software licensing agreements as well, in spite of the provision in s 1(c) of schedule 1 whereby it is stated that ss 2 to 4 do not apply to contracts as far as they create or transfer intellectual property rights. Because the provisions only applies to ss 2 to 4 and not to ss 6 to 7, exclusions of matters *re* the quality and performance of software are controlled by the UCTA.

The conclusion of a contract therefore establishes a duty to take reasonable care which will be breached if the producer fails to take as much care in producing the software as a reasonable person in the same position with the same expertise would have done. The burden of proving breach rests on the plaintiff. This already difficult task in an ES is made even more so because of the following factors:

(a) The experimental nature of the ES can lead to the argument that perfectly working software is impossible to produce in the current state of the art and, therefore, it is not careless to release slightly defective software. The plaintiff would have to show that the defect is such that a reasonable producer would not have released it.

(b) The interaction of the ES with data provided by the user will necessitate the difficult task of disentangling the workings of the system from the data in order to prove that the ES is defective. If the problem arose from the particular combination of the system and data, the plaintiff will have to show that a reasonable producer would have foreseen this possibility and taken measures to guard against it before she can be held liable.

2.6.1.4 Other contracts

(a) Software maintenance contracts

Software maintenance consists of the correction of errors and the provision of enhancements and updates to the software.[292] The software maintenance agreement is a contract for the provision of services and therefore subjected to the implied term that reasonable skill and care will be used in carrying out the service.[293] As such, an exclusion of this term will have to comply with the

292 Reed(2) 63; Tapper 161.

293 S 13 of the SGSA.

reasonableness test as set out in the UCTA.[294]

Although a software maintenance contract is not, strictly speaking, an acquisition contract, it is nevertheless relevant to the determination of a contractual cause of action in case of damage caused through the use of an ES, as a fault could have been introduced into the ES during the maintenancing of the system. Because all software is subject to a continuing process of development, corrective maintenance provides an opportunity for producers to correct errors which surface during the operation of the program.[295] Application software especially must be able to meet increased demands and in the case of an ES that provides professional services, it is very important that continuous updates are effected.

(b) Bureau services or outsourcing contracts

Bureau services entail the situation where an organisation's computer needs are catered to by a computer bureau, typically situated outside the customer organisation against the payment of a monthly service fee.[296] Such agreements consist of a contract for the supply of services.[297] The traditional type of bureau services provides for the service to take place at the bureau itself, but in recent times the services are being rendered on the premises of the organisation.[298] The services may also be rendered through electronic transmission, in which case it is not necessary for any of the parties to move around physically.[299]

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294 Ss 2 and 3.

295 Tapper 161.

296 Tapper 171-175.

297 Tapper 172.

298 See Staff reporter *Business Review Weekly (Australia)* of 16 September 1996 72.

299 *Ibid.*

Nowadays, bureau services are known as **outsourcing** which is fast becoming the most cost-effective way for organisations to meet their information technology (IT) needs. The broadest definition of outsourcing is a contract with a third party to perform all or some of the company's IT functions. According to an Australian financial magazine, outsourcing is fast becoming the most popular and efficient way for businesses to have an IT system that works, stays updated and reduces capital spending. Another advantage of outsourcing is that it frees a company for concentration on its core business. The main IT functions suitable for handing over to experts are "help desk" operations and mainframe data centre management. However, outsourcing may also go much further to include the contracting of external skills to develop and maintain application systems (such as ES's), communications systems and computer networking functions. A world-wide trend towards contracting out certain services and maintaining a smaller core of permanent staff is currently discernible and "outsourcing" is becoming a business in its own right.

Different outsourcing models exist which depend on the stipulations of the contracting agreement. Companies are moving away from the "all or nothing" outsourcing trend and are outsourcing only sections of their IT work. Another type of outsourcing agreement is found in co-sourcing in which a business-unit team works with the outsourcer. Such an agreement is usually achieved a few years after the initial outsourcing contract whereupon the outsourcer would then, instead of hourly rates, receive special benefits from the company.[300] It is also possible for a company to acquire the help of an outsourcing service comprising of a mobile computer unit, called the *Mobile Recovery Centre*, in times of a crisis, which is designed immediately to replace services disabled by fire, flood or some other disasters.[301]

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300 According to IT companies in Australia, outsourcing has steadily withdrawn internal IT operations, especially those of non-IT corporations: Staff reporter *Business Review Weekly* of 16 September 1996 74.

301 Staff reporter *Business Review Weekly* of 16 September 1996 76.

2.6.2 South African law

The specific contracts in terms of which software is acquired have been identified as contracts of sale, lease, the provision of services, and licensing.[302] The first three contracts are nominate contracts in South African law and the last-mentioned, the licensing contract, is an innominate contract to which the general requirements for contractual liability are applicable.[303] After an evaluation of the various types of contracts that parties may enter into when computer software is provided, Maré[304] quite correctly concludes that the problem of standard form contracts and clauses form an underlying issue to the conclusion of these contracts.

2.6.2.1 Specific acquisition contracts

(a) Purchase and sale

The contract of purchase and sale is an agreement in terms whereof the seller undertakes to deliver possession of a thing in return for the purchaser's undertaking to pay a sum of money.[305] The *essentialia* are therefore agreement with regard to the thing sold and the price. The object of the sale may be corporeal or incorporeal. The *naturalia* include the liability of the seller for latent defects and the implied warranty against eviction[306] which may be excluded. Such exclusions will be effective unless liability for latent defects are excluded completely.[307] Because no

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302 Maré 2-3; Eiselen 30-39. The position of the licensing contract as an acquisition contract in terms of our law is still unclear: see par 2.5.1.2 *supra*.

303 See par 2.2 *supra*.

304 At 11.

305 See in general Hosten 770 *et seq*; De Wet and Van Wyk 313 *et seq*.

306 De Wet and Van Wyk 291-294; Maré 62-64.

307 De Wet and Van Wyk 292.

software functions perfectly, these warranties can be problematic in the case of software. However, a perfect product is not required, the software should only be as functional as could reasonably be expected from such a product.[308] In the case of software, specifications are usually included as part of the contract with the result that any substantial non-compliance therewith may amount to a latent defect.[309] Liability for consequential and other damage is almost always excluded by the seller because of the high risk of potentially large claims as a result of defective software. Liability of the supplier is also mostly limited to the remedying of defects or the replacement of defective software or the purchase price.[310] The risk of damage or destruction of the software passes to the purchaser once the contract is *perfecta*.[311]

The seller's (software supplier's) main duty *ex lege* is to deliver the software in accordance with the stipulations of the contract. Where the seller has guaranteed the absence of defects or the presence of good qualities in the software sold, and thereupon delivers defective software or software without the guaranteed qualities, a breach of contract (warranty) will have been committed for which direct and consequential damages could be claimed in terms of the *actio empti*.[312] The seller will also be liable in terms of the *actio empti* for defects in the software which was knowingly not disclosed.[313] Where the seller is also the developer (manufacturer) of the software, liability in terms of the *actio empti* may be incurred for defects in the

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308 *Holmdene Brickworks (Pty) Ltd v Roberts Construction Co* 1977 3 SA 670 (A) 683.

309 Eiselen 33; Maré 63.

310 Eiselen 33; Maré 65.

311 De Wet and Van Wyk 308-311.

312 De Wet and Van Wyk 339; Maré 64-65; *Swift v Cohen* 1924 OPD 233; *Kock v Du Plessis* 1923 OPD 113; *Cluely v Muller* 1924 TPD 720; *Bower v Sparks, Young and Farmer's Meat Industries* 1936 NPD 1; *Minister van Landbou-Tegniese Dienste v Scholtz* 1971 3 SA 188 (A).

313 In such a case the liability is grounded in misrepresentation rather than breach of contract: *Cullen v Zuidema* 1951 3 SA 817 (C).

software even if a warranty was not given and even if the developer was ignorant of the existence of the defects.[314] The courts have gone even further and have held a seller whose business is to trade in a specific type of product, liable for consequential loss caused by such a defective product in the absence of any knowledge of the defect or a guarantee against such defects, relying on a statement of the French writer, *Pothier*.[315] Although the court in *Hackett v G & G Radio and Refrigerator Corporation*[316] doubted whether this rule of *Pothier* applies in our law, it was nevertheless followed in subsequent cases[317] until it was decided in *Kroonstad Westelike Boere-Ko-operatiewe Vereniging Bpk v Botha and Another*[318] that the trader who is unaware of the defect is only liable "where he publicly professes to have attributes of skill and expert knowledge in relation to the kind of goods sold."[319] This rule may be applicable to the software supplier who trades specifically in software, such as the typical computer shop or software house.

In the case of delivery of a defective thing without the seller having given any warranties or made any representations, the purchaser has the following two aedilian actions, based on the implied warranty against latent defects, available: the *actio redhibitoria* and the *actio quanti minoris*.[320] These actions stem from two actions introduced in Roman law by the *currules aediles*, officials of the *praetor*, who presided over the markets of Rome.[321] The *actio redhibitoria* may be instituted to

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314 *Bower v Sparks, Young and Farmers' Meat Industries Ltd supra*; *Holmdene Brickworks (Pty) Ltd v Roberts Construction Co Ltd supra.*

315 *Marais v Commercial General Agency Ltd* 1922 TPD 440.

316 1949 3 SA 664 (A).

317 *Odendaal v Bethlehem Romery Bpk* 1954 3 SA 370 (O); *Jaffe & Co (Pty) Ltd v Bocchi and Another* 1961 4 SA 358 (T).

318 1964 3 SA 561 (A).

319 *Supra* 571. *Cf* De Wet and Van Wyk 341-342 for a criticism of this decision.

320 *Hackett v G&G Radio and Refrigerator Corporation* 1949 3 SA 644 (A).

321 Hosten *et al* 774; De Wet and Van Wyk 342.

reclaim the purchase price in cases where the defect is substantial, in other words it must be unfit for the purpose for which it was bought. The *actio quanti minoris* may be instituted for a reduction in the purchase price where the defect is of a lesser nature.[322] These actions can be instituted in the alternative provided the plaintiff does not rely on inconsistent remedies based on the same set of facts.[323] This *ex lege* liability for latent defects may be excluded by agreement and the sale will then be *voetstoots*. Such an exclusion clause will only be valid concerning the seller's liability for defects of which she was unaware, as liability for *dolus* cannot be excluded.[324]

Requirements for the aedilian actions are:[325]

(i) a defect in the thing that renders it completely unfit or less fit for the purpose for which it was bought - the test is objective[326] and "the purpose for which it was bought" can mean its normal use or a special use contemplated by the parties;

(ii) the defect must not be negligible;[327]

(iii) the defect must not be apparent upon inspection by an average person[328] - the test is objective;[329]

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322 *SA Oil and Fat Industries Ltd v Park Ryne Whaling Co Ltd* 1916 AD 400.

323 *Le Roux v Autovend (Pty) Ltd* 1981 4 SA 890 (N).

324 *Van der Merwe v Culhane* 1952 3 SA 42 (T).

325 See De Wet and Van Wyk 343.

326 *Dibley v Furter* 1951 4 SA 73 (C) 80.

327 According to the *de minimis non curat lex* rule: *Dibley v Furter supra* 85.

328 *Deutschmann v Graham* 1912 EDL 214.

329 *Schwarzer v John Roderick's Motors (Pty) Ltd* 1940 OPD 170.

(iv) the defect must have existed at the time of the sale;[330] and

(v) the purchaser must not have been aware of the defect - the onus of proof is on the purchaser.[331]

The aedilian actions are also available against the seller who makes *dicta et promissa* to a buyer upon the faith of which the contract was entered or the price was agreed and which later turned out to be unfounded.[332] A *dictum et promissum* is a "material statement made by the seller to the buyer during the negotiations bearing on the quality of the *res vendita* and going beyond mere praise and commendation."[333]

(b) Lease or rental

A contract of letting and hiring of things[334] (also called a lease) is an agreement whereby one party (the lessor) undertakes to grant to the other party (the lessee) the temporary use and enjoyment of a thing in return for the latter's undertaking to pay rent in money. Where software is rented, the program and manuals must be returned to the lessor at the end of the rental period.[335] The *essentialia* are the agreements regarding the thing and the rent together with the *ius utendi fruendi*[336] as the object of the lease, and temporary transfer of the thing. The *naturalia* of the common law

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330 *Seboko v Soll* 1949 3 SA 337 (T).

331 *Cullen v Zuidema supra* 821.

332 *Phame (Pty) Ltd v Paizes* 1973 3 SA 397 (A). De Wet and Van Wyk 346-347.

333 *Phame (Pty) Ltd v Paizes supra* 417-418. However, see De Wet and Van Wyk's criticism at 346-347.

334 Known as the *locatio conductio rei* in Roman law. See generally De Wet and Van Wyk 355-382.

335 Eiselen 34.

336 The power to use and enjoy (a thing).

lease consist of a guarantee against latent defects and a guarantee that the property will be enjoyed undisturbed.[337] Any of these obligations may be excluded by the contracting parties.[338]

The main duty of the lessor is to deliver the thing let to the lessee in the condition agreed upon.[339] The lessor will be liable for breach of contract if there is a defect in the thing.

(c) Provision of services

A contract for the provision of services is viewed as a contract for letting and hiring of work[340] in terms of which a piece of work is let out by the lessor to the lessee who agrees to do the work for a remuneration.[341] Bespoke or custom made software as well as customised software[342] is developed under this form of contract. The lessee does not work under the control of the lessor - she is an independent contractor.[343] The *locatio conductio operis* contains an implied warranty that the work will be done in a proper manner and that the materials used will be of good quality and suitable for the particular purposes. The software will also have to comply with the specifications contracted for. In case of a defect, payment may be refused until it is rectified, the contract price may be reduced, or a claim for damages may be instituted where the contract price has already been paid.[344] The common law

337 Maré 89-90.

338 Eiselen 34.

339 De Wet and Van Wyk 358.

340 *Locatio conductio operis.*

341 See generally De Wet and Van Wyk 386-390.

342 See ch 2 par 10.1.1 *supra.*

343 *Fisk v London & Lancashire Insurance Co Ltd* 1942 WLD 63 73.

344 Eiselen 36; *BK Tooling v Scope Precision Engineering* 1979 1 SA 391 (A).

liability for latent defects may also be validly excluded as may be done in a contract of purchase and sale.[345]

(d) Licensing

Eiselen[346] and Maré[347] distinguish between licensing as a means of acquiring software, and licensing as a way of regulating the use of copyrighted material.[348] In the first instance a type of acquisition contract is concluded whereby software is supplied under a licensing contract, whereas in the second instance, a licensing agreement regulating the use of copyrighted material, is concluded.[349] These contracts are not necessarily between the same parties: the acquisition agreement is concluded between the supplier and the user, and the licensing agreement is concluded between the developer (copyright holder) of the software and the user.[350] In this paragraph the possibility of regarding licensing as a form of acquisition, distinguishable from licensing as an agreement which regulates copyright, is discussed.

The reason why software is more often said to be licensed than sold, stems from the practical difficulties in American law with regard to copyright law and a sale.[351] The position of the licensing contract in South African law is still unclear, it is an innominate contract with no applicable *naturalia*.[352] As stated before, there are

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345 See (a) *supra*.

346 At 34.

347 At 117.

348 See par 2.5.1 *supra* with regard to the traditional licensing agreement.

349 *Ibid.*

350 See par 2.5 *supra*.

351 See par 2.6.1.3 *supra*.

352 See par 2.5.1.2 *supra*.

always at least two agreements in existence when software is used, namely the licensing contract and the acquisition contract.[353] To view the "licensing" of software also as a manner of acquisition apart from sale, lease or the provision of services, is in my opinion, to negate the essence of the transaction taking place when software is acquired, which is that the user is put in the posession of a specific manifestation of the software as owner, lessor or the recipient of a service which includes the acquisition of a product, in exactly the same way as a book or tape or any other copyrighted product. Even the fact that software may be directly transferred electronically or installed on to the user's computer system, makes no difference to the nature of the transaction taking place.[354] Depending on the nature of the transaction, the latter products are purchased, hired or acquired by way of a *locatio conductio operis*.[355] To state in the case of a book for example, that the purchaser of a book is not the owner thereof is absurd.[356] The only difference between the latter products and software, to my mind, lies in the prescription of the use of the copyrighted material: in the case of software such use is much more narrowly defined than in the case of books and tapes,[357] but the manifestation of the software remains the object of a sale or lease or whatever the case may be. Nevertheless, until such time as the South African courts have had the opportunity to pronounce upon the nature and effect of software licensing agreements, the possibility of regarding "licensing" as a form of acquisition *sui generis*, cannot be excluded.

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353 See par 2.1 *supra*.

354 It is already possible to receive books in this manner from the Internet, which books are then purchased from the service provider. See also the discussion of the English decision in *St Albans DC v ICL supra* by Colbey 1996 *Solicitors Journal* 1024-1025, where the English court of Appeal specifically found that software directly installed on to the user's computer constitutes "goods" which was sold for purposes of the UCTA: see par 2.6.1.3 *supra*.

355 A contract for the provision of services: see (c) *supra*.

356 Eiselen 35; Reed(2) 46.

357 For example, only one set of backup copies are permitted in the case of software whereas in the case of tapes any quantity of copies for private use is allowed.

2.6.2.2 Other contracts

(a) Maintenance and support contracts

The maintenance agreement is a contract for the provision of services[358] in terms whereof the service provider has the obligation to check the functioning of the software, to install updates of the system and to help with software malfunctions.[359] If the service provider does not perform as agreed to in terms of the contract, the same remedies as in the case of the software acquisition contract referred to above[360], applies.

(b) Bureau services or outsourcing contracts

The computer bureau contract is a contract for the letting and hiring of work[361] with the same obligations as referred to previously.[362] Outsourcing contracts are also contracts for the letting and hiring of work, and may take place on the same basis as those discussed under Anglo-American law.[363] If the service provider does not perform in accordance with the agreement between the parties, the same remedies as above[364] apply.

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358 *Locatio conductio operis.*

359 Eiselen 39.

360 Par 2.6.2.1 (c).

361 *Locatio conductio operis.*

362 Par 2.6.2.1 (c) *supra.*

363 See par 2.6.1.4 (b) *supra.*

364 Par 2.6.2.1 (c) *supra.*

2.7. Professional liability

Professional liability refers to the liability a person who engages in a profession, trade or calling which demands special knowledge and skill.[365] As such the term "professional liability" does not constitute a separate and independent cause of action, but is used to describe the liability of a certain group of persons whose negligence are judged by a higher standard of skill than that of ordinary wrongdoers.[366] Professional liability may be grounded in an action based on contract as well as delict,[367] and in this paragraph the discussion is limited to actions of a contractual nature.[368]

In most instances a contract will exist between the professional user and her client in terms whereof the former undertakes to render professional services to the latter for a specified fee. The contractual nature of the relationship that exists between the professional user and her client who may be the possible injured party, is one of mandate.[369] In terms of the mandate the professional user (mandatary) undertakes to provide a professional service with such measure of skill and competence as can be reasonably expected from another professional of the same profession to the client (mandator).[370] The standard of care required is not the highest possible

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365 Midgley(1) 146 and (2) 120-132. See also *Van Wyk v Lewis* 1924 AD 438 444; *Blyth v Van der Heever* 1980 1 SA 191 (A) 221; *Randaree v WH Dixon & Associates* 1983 2 SA 1 (A) 4; *S v Kramer* 1987 1 SA 893; *Pringle v Administrator Tvl* 1990 2 SA 379 (W) 384; *Castell v De Greef* 1993 3 SA 501 (C). See also ch 6 par 6.2 *infra*.

366 See also Weir 6-3; Pretorius 14; Jackson and Powell 3.

367 *Ibid.*

368 See par 3.3.3.3 *infra* with regard to professional liability in delict.

369 Midgley(2) 1; Strauss 3; Claassen and Verschoor 115.

370 Claassen and Verschoor 116; Midgley(2) 5; De Wet and Van Wyk 386.

degree[371] of professional skill, and unless it is expressly so guaranteed, professionals do not normally warrant that they will achieve the results that their clients desire.[372] A professional is judged by a higher standard of care than is required from an ordinary person because more can reasonably be expected of a skilled professional than of an untrained lay-person.[373] The *ex lege* duties of the mandatary as imposed by the contract of mandate are to perform the task, to obey instructions, to exercise care and diligence, to advise and impart information, to account and to show good faith.[374] If the professional performs her duties in a negligent manner, a breach of contract is committed for which the client may claim damages. Although exclusion of liability clauses are not invalid, the general rule is that professional persons of integrity do not resort to excluding liability.[375] The possibility of a delictual claim may also arise as professional relationships give rise to a legal duty to exercise the necessary care, skill and diligence towards their clients.[376]

When the type of ES embodied in the Intelligent Assistant[377] is used, it serves as a tool or decision-aid for professional users such as lawyers, doctors, engineers, etcetera during the provision of their professional services. In the same way an ES

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371 *Mitchell v Dixon* 1914 AD 519 525; *Castell v De Greef supra* 509.

372 *Buls v Tsatsarolakis* 1976 2 SA 710 (T) 723. See also Strauss 41 and the unreported decision to which he refers, namely that of *Behrmann and Another v Klugman* 1988 WLD in which the court found that an unsuccessful vasectomy was not accompanied by a guarantee from the doctor as to the permanent success of the operation. The court accordingly held that there was not a breach of contract by the doctor: Strauss *ibid*.

373 *Guardian National Insurance Co Ltd v Wyers* 1988 1 SA 255 (A) 263.

374 Midgley(2) 73; De Wet and Van Wyk 386-387.

375 Midgley (2) 87. However, there is no reason why a partial exclusion that defines the scope of the professional services, should not be accepted: Midgley (2) 87.

376 Midgley(1) 1; Strauss 243. See ch 4 par 2 *infra* with regard to the concurrence of claims.

377 See ch 2 par 11 *supra*.

Machine can be used by professional users in the practice of their professions. Where a client of the professional user consequently suffers damage because the professional used a defective ES, or used a sound ES incorrectly, or did not use an ES at all in circumstances where one should have been used, a breach of contract based on positive malperformance may have taken place if such conduct amounts to breach of one of the duties defined above.[378]

Professional liability may also arise with regard to the contractual liability incurred by the producers of an ES. The DE as an expert in the field of knowledge of the ES, and the designers as the toolbuilders and computer programmers of an ES, may be held professionally liable for incorrect knowledge or programming supplied, either towards the main developer of the system in terms of the employment contracts for the provision of services existing between them,[379] or towards the user in terms of an existing software development contract. With regard to third parties, the professional does not undertake any contractual obligations to a non-client[380] with the result that such a claim will have to be based in delict.[381]

2.8 Conclusion

Where damage is incurred by the use of ES's, contractual liability may occur between parties in contract.[382] The contractual liability will depend on the type of contract(s) in existence which, in the case of software use, consists of at least two types of contracts, namely the licensing contract between the developer and the user, and the

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378 Claassen and Verschoor 117; see also par 2.2.2 *supra*.

379 The issue whether the developers of software in general can be regarded as a profession and evaluted in terms of a professional standard, is a contentious one: see ch 6 par 6 *infra*.

380 Wunsh 1988 *TSAR* 9.

381 See par 3.3.3.3 *infra*.

382 See par 2.1 *supra*.

acquisition contract between the supplier and the user.[383] Before a contractual action can be instituted the requirements for a valid contract must be met in terms of the general principles of contract.[384] In the case of the use of a defective ES, use of an incorrect ES, and the non-use of an ES, breach of contract based on positive malperformance may occur if such use constitutes non-compliance with the terms of the contract in existence.[385] In case of breach of contract, parties will have a claim for damages for patrimonial loss suffered, including foreseeable consequential loss, whether the contract is upheld or cancelled.[386] Contractual liability is frequently excluded or limited by exemption clauses.[387] In contrast to the position in other jurisdictions, notably the United Kingdom and the United States, South African contracting parties have virtually no protection against unfair contract clauses.[388] This situation is especially detrimental to the position of software consumers subjected to standard form contracts, and the legislator should remedy the situation speedily.[389] These exclusions, which may exclude contractual as well as delictual liability, may occur in the acquisition contract concluded between the supplier and the user or in the licensing agreement concluded between the developer and the user.[390] For reasons already shown,[391] it often transpires that the licensing contract is not validly concluded, unlike the acquisition contract which comes into

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383 *Ibid.*

384 See par 2.2 *supra.*

385 See pars 2.2.2.2 and 2.2.2.3 *supra.*

386 See par 2.2.2.3 *supra.*

387 See par 2.4.*supra.*

388 See par 2.4.2.3 *supra.*

389 The SALC has already made extensive proposals in this regard: see par 2.4.2.3 *supra.*

390 See par 2.4 *supra.*

391 See par 2.5.2.2 *supra.*

existence when the software is commissioned, purchased, hired or licensed.[392] The user may therefore be in the position where she does not have a contractual or delictual claim against the supplier (because it has been excluded), but she does have a delictual action against the developer as no contractual exemption applies between the parties (due to the licensing agreement not being validly constituted).[393] If the developer is a foreign party, as is frequently the case, the plaintiff may be in an invidious position. Where a valid licensing contract does exist, the delictual liability of the developer will, more often than not, be excluded which, in terms of South African law will probably be enforceable, leaving the injured party with no claim at all.[394] However, in the case of Anglo-American law being the applicable law of the contract,[395] an exemption clause may be found unconscionable and therefore invalid.[396]

The following software acquisition contracts have been identified in South African law namely, contracts of purchase and sale, lease or rental, the provision of services and licensing.[397] The various duties in terms of the relevant contractual obligations, and the possibility of exemption clauses have been discussed and will not be repeated here.[398] Other contracts, such as contracts for maintenance and support, bureau services or outsourcing contracts, may also lead to contractual liability in case of an ES error causing damage.[399] In the case of an ES used by a professional user in the execution of her professional duties, professional liability may be incurred if she

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392 See par 2.6 *supra*.

393 See par 2.5.2.2 *supra*.

394 See par 2.5.1 *supra*.

395 See ch 4 par 4.4.1 *supra*.

396 See par 2.6.1.3 *supra*.

397 See par 2.6.2.1 *supra*.

398 See par 2.6.2.1 *supra*.

399 See par 2.6.2.2 *supra*.

does not render a service with the measure of skill and competence that can reasonably be expected.[400] The same applies to the various producers of an ES who may be held liable in terms of the standard of skill of their profession in the execution of their contractual duties in producing the ES.[401] The producers in the employ of the developer must comply with their duties towards the latter according to the terms and conditions of their contracts of employment[402] and may be liable for any non-compliance thereof.[403] The employer will be liable for any contractual obligations incurred by employees which fall within the employer's business.[404] Where the producers render their services to a developer in terms of a *locatio conductio operis*, they are independent contractors for whose actions the developer will not be liable as an employer.[405]

3. Delictual liability

3.1 Introduction

The South African law of delict is founded on Roman and Roman-Dutch law with some influence from English law.[406] As such it is based on general principles of liability as a basic point of departure, upholding the following approach as formulated in *Perlman v Zoutendyk*[407]:

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400 See par 2.7 *supra*.

401 *Ibid*.

402 Such contracts are in the form of a *locatio conductio operarum*.

403 See par 2.6.2.2 *supra*.

404 Midgley(2) 183; Claassen and Verschoor 127; Strauss 79.

405 Eiselen 36; Strauss 79.

406 Midgley (1) 18; Neethling *et al* 9; Van der Merwe and Olivier 6.

407 1934 CPD 151 155.

> Roman-Dutch law approaches a new problem in the continental rather than the English way, because in general all damage caused unjustifiably is actionable, whether caused intentionally (*dolo*) or by negligence (*culpa*).

When a conflict between the interests of different legal subjects causes loss to one of them, it must be ascertained who must bear the loss. In this study the delictual liability of the producers and the users, arising from loss caused through the use of ES's, are discussed. The basic rule is that the loss lies where it falls[408] except when the rights of the victim are culpably infringed, in which case the loss is shifted to the actor.[409] The circumstances in which the latter situation is likely to occur are pointed out in this chapter with reference to the general principles involved, while a detailed discussion follows later.[410] As stated before,[411] the use of a defective ES, the incorrect use of a sound ES, and the non-use of an existing ES may lead to the commission of a delict by the producers and/or the users in respect of any of the three types of ES's identified, namely the Intelligent Assistant, the Self-Help System, and the ES Machine.

A delict is defined as the wrongful and culpable act of a person which causes harm to another.[412] These principles for liability apply to any infringement of an individual interest, thereby giving South African law a "generalising approach"[413] which is in direct contrast to the casuistic approach of Anglo-American tort law.[414] According

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408 *res perit domino.*

409 *Herschel v Mrupe* 1954 3 SA 464 (A) 494.

410 See ch 6 *infra.*

411 *Cf* ch 1 par 1.1 and ch 2 par 11 *supra.*

412 Neethling *et al* 4; Van der Walt 1; Van der Merwe and Olivier 1. Boberg at 1 defines a delict as the " infringement of another's interests that is wrongful" without referring to the requirement of fault. See Neethling *et al* 4 fn 8 for their criticism of this definition.

413 Neethling *et al* 5, especially fn 11.

414 See ch 5 part I pars A 1.1.1 and B 1.1.1 *infra.*

to the casuistic approach, a set of specific delicts or torts exists, each with its own rules that have to be satisfied before a wrongdoer can be held liable under that rubric. However, there is a qualification to the generalising approach in our law in that only two basic types of delicts are distinguished in accordance with the type of loss caused: those that cause **patrimonial damage**[415] and those that cause injury to **personality.**[416] The type of loss determines the remedy available for recovering the loss caused.[417] Therefore, all delicts that are committed fall under either or both of the two basic types. It is on these two types of delict that the two pillars of the law of delict, namely the *actio legis Aquiliae* and the *actio iniuriarum*, are grounded.[418] A third action, the Germanic action for pain and suffering which was taken up in Roman-Dutch law, also became available. In terms of the Aquilian action, damages for the wrongful and intentional or negligent causing of **patrimonial damage** may be claimed; in terms of the *iniuria* action, **satisfaction or sentimental damages** may be claimed for intentional injury to personality interests, and in terms of the Germanic action, **non-patrimonial damages** for pain and suffering associated with physical injury which was negligently caused, may be claimed.[419]

Because of its generalising approach, the law of delict is very flexible and can accommodate new situations that arise in modern times with relative ease.[420] This elasticity of general principles is limited by the generally conservative approach of our

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415 *damnum iniuria datum.*

416 *iniuria.*

417 See par 3.2 *infra.*

418 Neethling *et al* 5-6.

419 *Ibid.*

420 An example is the protection of **privacy** and the **goodwill of a company:** Neethling *et al* 4.

courts to the extension of liability.[421] However, they have extended liability to novel situations where required by legal or public policy and it seems as if recent decisions are adopting new or modified legal principles whereby the foundation is being laid for further policy decisions.[422] The general **criterion of reasonableness**, the legal convictions of the community or the *boni mores*, based on public policy has been used to justify the extension of delictual liability to novel situations, thereby laying a foundation for further policy decisions.[423] Examples are the extension of delictual liability in cases involving omissions and pure economic loss to forms of conduct or types of losses not previously recognised as founding such liability.[424] The requirement of wrongfulness, determined by the open-ended *boni-mores* standard, thus plays a major in instances where policy considerations have led to the extension of delictual liability.[425] Open-ended standards refer to legal rules which, by their formulation, expressly or by implication incorporate considerations of policy in their application. Examples are two of the general requirements for delictual liability, namely the currently accepted criteria for the determination of wrongfulness and of

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421 *Herschel v Mrupe supra*; *Union Government v Ocean Accident and Guarantee Corp Ltd* 1956 1 SA 577 (A) 584; *Lillicrap, Wassenaar & Partners v Pilkington Bros (SA) (Pty) Ltd* 1985 1 SA 475 (A) 501.

422 Midgley(1) 18; Van Aswegen 1993 *THRHR* 171. *Cf Compass Motor Industries (Pty) Ltd v Callguard (Pty) Ltd* 1990 2 SA 520 (W); *Minister van Polisie v Ewels* 1975 3 SA 590 (A); *Administrateur, Natal v Trust Bank van Afrika Bpk* 1979 3 SA 824 (A); *Marais v Richard* 1981 1 SA 1157 (A); *Pakendorf v De Flamingh* 1982 3 SA 146 (A); *Schultz v Butt* 1986 3 SA 667 (A); *International Shipping Co (Pty) Ltd v Bentley* 1990 1 SA 680 (A); *Lillicrap, Wassenaar & Partners v Pilkington Bros (SA) (Pty) Ltd supra*.

423 Midgley(1) *ibid*; Van Aswegen 1993 *THRHR* 171.

424 *Minister van Polisie v Ewels supra*; *Compass Motor Industries (Pty) Ltd v Callguard (Pty) Ltd supra*; *Administrateur, Natal v Trust Bank van Afrika Bpk*; *Greenfield Engineering Works (Pty) Ltd v Strachan Construction Co (Pty) Ltd* 1978 4 SA 901 (N); *Lillicrap, Wassenaar and Partners v Pilkington Brothers (SA) (Pty) Ltd supra*; *Shell and BP SA Petroleum Refineries (Pty) Ltd v Osborne Panama SA* 1980 3 SA 653 (D); *Arthur E Abrahams and Gross v Cohen* 1991 2 SA 301 (C); *Indac Electronics (Pty) Ltd v Volkskas Bank Ltd* 1992 1 SA 783 (A).

425 Van Aswegen 1993 *THRHR* 182-185.

legal causation or remoteness of damage.[426] Public policy not only has a leading role in determining and limiting liability through the application of the open-ended norms utilised in the tests for wrongfulness and causation, it also determines or plays a role in determining whether liability should be strict or based on fault,[427] whether someone has title to sue,[428] what form of intention should be required,[429] what constitutes negligent conduct,[430] what constitutes actionable harm,[431] who should bear the onus of proof in a given action and what is the extent of such onus.[432]

The question arises whether delictual liability incurred through the use of ES's can likewise be fully accommodated by our existing common law principles without the intervention of the legislator. This issue is fully explored later when a detailed exposition of the applicable delictual liability is undertaken.[433] Here, the general requirements for delictual liability are briefly set out in order to show their applicability to the situation of ES use.[434]

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426 Van Aswegen 1993 *THRHR* 171-195.

427 *Pakendorf v De Flaming supra*; *PMB Armature Winders v Pietermaritzburg City Council* 1981 2 SA 129 (N) 133-134; *Cosmos (Pty) Ltd v Phillipson* 1968 (3) SA 121 (R) 129.

428 *Dhlomo v Natal Newspapers (Pty) Ltd* 1989 1 SA 945 (A); *Argus Printing and Publishing Co Ltd v Inkatha Freedom Party* 1992 3 SA 579 (A) 588.

429 *Minister of Justice v Hofmeyr* 1993 3 SA 131 (A) 154.

430 *Ngubane v SA Transport Services* 1991 1 SA 756 (A) 776.

431 *Union Government (Minister of Railways and Harbours) v Warneke* 1911 AD 657; *Eduard v Administrateur Natal* 1989 2 SA 368 (D).

432 *Mabaso v Felix* 1981 3 SA 865 (A) 871; *Neethling v Du Preez, Neethling v The Weekly Mail* 1994 1 SA 708 (A) 770.

433 Ch 6 *infra*.

434 See par 3.3.6 *infra*.

3.2 Remedies

There are three actions with which compensation for the commission of delicts are recovered: (a) the *actio legis Aquilia* for the recovery of damages for the wrongful and intentional or negligent causing of patrimonial damage; (b) the *actio iniuriarum* to claim satisfaction for the wrongful and intentional injury to personality interests; and (c) the action for pain and suffering to claim compensation for certain types of injury to the personality arising from the wrongful and negligent impairment of the physical-mental integrity.[435]

Although not improbable,[436] it is unlikely that in the type of cases forming the subject of this thesis, the damage will be caused through intentional conduct and will consist of injury to personality, and for that reason the treatment of delictual liability is confined to liability for injury to person and property incurred through negligent conduct.[437] It follows that instances where the *actio iniuriarum*, requiring intention, would have been applicable are excluded from this discussion. The remedy likely to be used most frequently in the context of ES liability, is the Aquilian action for compensation of negligently caused patrimonial damage.[438] The *sui generis* action for pain and suffering will be applicable to recover non-patrimonial damages for negligently caused personal injury. Whereas it can be stated that pure economic loss is more readily sustained than personal injury in cases of damage incurred through

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435 Neethling *et al* 5; Van der Walt 2; Van der Merwe en Olivier 15; Boberg 18.

436 It is possible that instances of producers and users acting intentionally (with *dolus)* will occur but it is submitted that such cases will be exceptional and do not form part of legitimate software production.

437 Fraud as a delict is therefore also not discussed.

438 For example, a defective MES which is negligently used as an Intelligent Assistant by the doctor, is likely to cause personal and property damage to the plaintiff: see ch 1 par 1.1 *supra*.

the use of conventional software,[439] this is not necessarily the case with ES software as it is of a nature which frequently entails risk of bodily injury.[440]

3.3 Requirements of a delict

In terms of the definition of a delict there are five requirements or elements that must be present before a delict is constituted: (i) an act, (ii) wrongfulness, (iii) fault, (iv) causation and (v) damage.[441] The development of **strict liability** (liability without fault) in certain instances is an extension of traditional delictual liability which requires fault.[442]

3.3.1 Conduct

Conduct is a voluntary **human** act or omission.[443] Only a human being can incur delictual liability.[444] A juristic person such as a company or a software house may

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439 Conventional software refers to programs that manipulate data instead of knowledge as in the case of ES software: see ch 2 par 5 *supra*. As such, conventional software is mostly used for ordinary data-processing and not in decision-making applications to be used in potential risk activities.

440 Two examples are the high incidence of ES applications in the medical domain and in safety-related products such as the "fly-by-wire" pilot system where a defect in the system which leads to a crash is bound to cause bodily injury: see ch 2 pars 4 and 9 *supra*.

441 Neethling *et al* 4.

442 *Cf* Neethling *et al* 341 *et seq*. See ch 6 par 7 *infra*.

443 Neethling *et al* 21 *et seq*; Van der Merwe and Olivier 24 *et seq*; Van der Walt 57; Boberg 41; Midgely(1) 47-49; Snyman 57.

444 August 1988 *CLJ* 382 argues that robots (which are controlled by software that effect a material output, and therefore similar to an ES Machine) should be acknowledged as legal entities attracting independent liability: see ch 2 par 2 *supra*. See also Cole 1990 *CLJ* 153 who notes that it is not yet possible to hold the ES itself liable for damage caused: see ch 2 par 2.1 *supra*.

commit a delict through the conduct of its human members.[445] In such a case the act of a human being is attributed to the legal entity.[446] The following guideline is submitted by Neethling *et al*[447] to establish when the act of a human is attributable to a legal entity before it can be held delictually liable: "An act which is performed by or at the command of, or with the permission of a director, official or servant of the legal corporation in the exercise of his duties or functions in advancing or attempting to advance the interests of the legal corporation, is deemed to have been performed by such corporation." In the case of damage caused by an ES, liability will either settle on the human user of the ES because of the incorrect use of the ES, or on the human producer of the ES because of a defect in the ES itself. A human act is therefore still present whether the ES is used as an instrument[448] to commit a delict, or whether the production of the ES constitutes a delict, as in the case of a defective ES.

The conduct must furthermore be voluntary which implies that the actor has the mental ability to control muscular movements.[449] Conduct is voluntary if the actor is capable of making a decision about the conduct and is capable of preventing the prohibited act or result if she concentrates on doing so.[450]

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445 Neethling *et al* 22.

446 *Ibid.*

447 At 22 fn 6.

448 An object or an animal can be used as an instrument to commit acts: *Jooste v Minister of Police* 1975 1 SA 340 (E); *Chetty v Minister of Police* 1976 2 SA 450 (N).

449 The same principle exists in criminal law: *Cf* Snyman 52-53.

450 *S v Johnson* 1969 1 SA 201 (A) 204; *S v Goliath* 1972 3 SA 1 (A) 29; *S v Trickett* 1973 3 SA 526 (T) 532; *S v Chretien* 1981 1 SA 1097 (A) 1104. A defence of "automatism" can be advanced by the defendant who, due to certain conditions, acted mechanically or involuntary: *Cf* Neethling *et al* 23 *et seq*; Van der Merwe and Olivier 26 *et seq*.

Conduct may consist of a commission (positive conduct) or an omission.[451] An omisson can be described as a failure to take positive steps to prevent harm to another.[452] For an omission to take place, the failure to act must not form an integral part of positive conduct such as driving, as it would then constitute negligent positive conduct.[453] Liability for **omissions** is more restricted than liability for commissions.[454] In the case of an *omissio* there must be a legal duty to act positively before the conduct can be regarded as unlawful.[455] Control over a person or thing constitutes positive conduct and inaction or failure to take precautions during the activity of controlling may constitute negligent control which may be regarded as a commission or as an omission.[456] **Product liability** cases illustrate examples of negligent control by the manufacturer of a defective product.[457]

Positive conduct may be in the form of physical conduct or in the form of a statement. Different policy rules are considered to determine liability when statements instead of physical conduct cause damage.[458] If such statements are made negligently,

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451 Neethling *et al* 26; Van der Walt 58; Snyman 55; Boberg 210; Van der Merwe and Olivier 31.

452 Neethling *et al* 27; Van der Walt 58.

453 *Ibid.*

454 Neethling *et al* 27; Van der Walt 58; Boberg 211 states:

> The forces of history and social policy maintain the distinction between positive and negative conduct by viewing the latter more benevolently than the former: the duty not to cause harm is more stringent than the duty to prevent it.

455 *Minister van Polise v Ewels* 1975 3 SA 590 (A). See par 3.3.2.3 *infra*.

456 Midgley(1) 48; Pretorius 254-255. In this way the **act** is constituted in the case of products liability: see ch 6 par 5 *infra*.

457 Neethling *et al* 304 *et seq*; Boberg 193 *et seq*. See ch 6 par 5 *infra*.

458 Midgley(1) 47; Van Aswegen 1993 *THRHR* 182.

liability may arise from **negligent misrepresentation**.[459]

3.3.2 Wrongfulness

The conduct of the defendant must have been wrongful, it must have caused harm in a legally reprehensible or unreasonable manner.[460] The determination of wrongfulness consists of a twofold investigation: Firstly, it must be determined whether the act has in fact caused a harmful result and secondly, it must be determined whether this harmful result occurred in an unreasonable manner in violation of a legal norm.[461]

3.3.2.1 The test for wrongfulness

Wrongfulness is a conclusion of law which is drawn by the court from the facts before it.[462] In determining whether conduct is unlawful, the courts consider the conflicting interests of the parties, their relations to each other, the circumstances of the case, any existing superior rights, and policy considerations.[463] Considerations of public and legal policy indicate the community's perception of justice, equity, good faith and reasonableness, to be taken into account when the court has to render a value

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459 Neethling *et al* 286 *et seq*; Boberg 58 *et seq*. See ch 6 par 2 *infra*.

460 Conduct is therefore wrongful when it is unreasonable. *Cf* Neethling *et al* 29 *et seq*; Van der Merwe and Olivier 49 *et seq*; Van der Walt 20 *et seq*; Boberg 30 *et seq*; Midgley(1) 49 *et seq*.

461 *Universiteit van Pretoria v Tommie Meyer Films (Edms) Bpk* 1977 4 SA 376 (T); Neethling *et al* 29.

462 *Mabaso v Felix* 1981 3 SA 865 (A) 875; *Natal Fresh Produce Growers' Association v Agroserve (Pty) Ltd* 1990 4 SA 749 (N) 757.

463 Midgley (1) 50; *Natal Fresh Produce Growers Association v Agroserve (Pty) Ltd supra* 754; *Minister of Law and Order v Kadir* 1995 1 SA 303 (A) 318.

judgement in terms of society's notion of justice.[464]

The general criterion of reasonableness, also referred to as the legal convictions of the community (the *boni mores*) is the norm or test used to determine whether conduct is wrongful.[465] This test is an objective *ex post facto* process, therefore it is sometimes said to be viewed by the courts from the perspective of the "reasonable bystander".[466] In applying the *boni mores* test, the court has to weigh the conflicting interests of the plaintiff and the defendant in the light of all the relevant factors mentioned above, in order to decide whether the defendant's conduct was reasonable or unreasonable.[467] The infringement of a subjective right and the violation of a legal duty are specific examples of the legal norms used in the application of the *boni mores* test.

Although the reasonableness standard can readily be applied to novel situations, the courts will only extend the ambit of delictual liability to new situations where "there

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464 *Compass Motor Industries (Pty) Ltd v Callguard (Pty) Ltd supra* 528-529; *Trope v SA Reserve Bank* 1992 3 SA 208 (T) 214; *Motor Industry Fund Administrators (Pty) Ltd v Janit* 1994 3 SA 56 (W) 61.

465 *Universiteit van Pretoria v Tommie Meyer Films (Edms) Bpk* 1977 4 SA 376 (T) 387; *Minister van Polisie v Ewels* 1975 3 SA 597 (A); *Marais v Richard* 1981 1 SA 1157 (A) 1168; *Lillicrap, Wassenaar & Partners v Pilkington Bros (SA) (Pty) Ltd* 1985 1 SA 475 (A) 498; *Kadir v Minister of Law and Order* 1992 3 SA 737 (C) 741; *Borgin v De Villiers* 1980 3 SA 556 (A) 577; *Ramsay v Minister van Polisie* 1981 4 SA 802 (A) 811; *Natal Fresh Produce Growers Association v Agroserve (Pty) Ltd supra* 753; *Macadamia Finance Ltd v De Wet* 1991 4 SA 273 (T) 278; *Argus Printing and Publishing Co Ltd v Inkatha Freedom Party* 1992 3 SA 579 (A) 588; *Knop v Johannesburg City Council* 1995 2 SA 1 (A) 27; *Administrateur, Tvl v Van der Merwe* 1994 4 SA 347 (A) 361; *Administrateur, Natal v Trust Bank van Afrika Bpk* 1979 3 SA 824 (A) 833; *Coronation Brick (Pty) Ltd v Strachan Construction Co Ltd* 1982 4 SA 371 (D) 380; *Hawker v Life Offices Association of South Africa* 1987 3 SA 777 (C) 781; *Schultz v Butt* 1986 3 SA 667 (A) 679; *Clarke v Hurst* 1992 4 SA 630 (D) 651; *Lanco Engineering CC v Aris Box Manufacturers (Pty) Ltd* 1993 4 SA 378 (D) 380.

466 *Borgin v De Villiers supra* 577. *Cf* Midgley (1) 50-54; Neethling *et al* 31-39; Boberg 30-54.

467 *Ibid.*

are positive policy considerations which favour such an extension".[468] However, the words of Conradie J in *Kadir v Minister of Law and Order*[469] are also appropriate:

> (B)ut one should remember that we are 10 years wiser now and that Courts nowadays are a great deal more comfortable with the notion that a decision on the wronfulness of the act or omission in a novel duty situation, whether in the field of physical damage or economic loss, is custom-made for that particular situation. With the aid of the test in *Ewels* (*supra*) we can now pinpoint very particular features of a particular situation which can be seen to be wrongful in one context and in practically no other.

According to Van Aswegen,[470] the extension of delictual liability to negligent misrepresentation[471] and conduct causing pure economic loss,[472] is based on policy considerations. The extension of Aquilian liability to conduct causing pure economic loss was developed further in other cases in which the following two factors emerged as being decisive: (i) the policy consideration of a fear of overwhelming potential liability which is based on the constitutional objection to an unlimited number of trials occupying the courts and impairing the administration of justice and moral objections to imposing an impossible burden on the wrongdoer,[473] and (ii) reasonable foreseeability which is actually the subjective foresight or knowledge of the wrongdoer that her conduct would cause loss to the plaintiff - knowledge of the identity of the plaintiff and of the loss which will be caused justifies the imposition of liability.[474] In a recent Appellate decision[475] the court emphasized the absence

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468 *Lillicrap, Wassenaar & Partners v Pilkington Bros (SA) (Pty) Ltd supra* 504.

469 *Supra* 742.

470 1993 *THRHR* 171-195.

471 *Administrateur, Natal v Trust Bank van Afrika Bpk* 1979 3 SA 824 (A).

472 *Minister van Polisie v Ewels* 1975 3 SA 590 (A); *Compass Motor Industries (Pty) Ltd v Callguard (Pty) Ltd* 1990 2 SA 520 (W).

473 Pretorius 269.

474 In such a case, the main objection to indeterminate liability is absent as foreseen loss to an identified victim can never be indefinite: Van Aswegen 1993 *THRHR* 184.

of limitless liability as a factor indicative of the policy considerations imposing a legal duty in the circumstances.[476] The court also mentioned the possibility of effective loss-spreading through insurance as a policy consideration to be applied for the protection of the economic interests of society as a whole.[477]

The principle of foreseeability of harm, which is the cornerstone for the test of negligence,[478] is one of the factors considered by the court during the application of the test for wrongfulness.[479] The Constitution,[480] in particular the Bill of Rights,[481] are relevant factors to be taken into account when assessing whether or not conduct is reasonable.[482] This follows from the provisions of the application clause[483] in which the legislature, the executive and the judiciary[484] are bound to apply or develop the common law in accordance with the fundamental rights accorded to natural and juristic persons in the Constitution.[485] The values reflected in the Constitution, namely "to transform the South African legal system into one concerned with openness, accountability, democratic principles, human rights and reconciliation

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475 *Indac Electronics (Pty) Ltd v Volkskas Bank Ltd* 1992 1 SA 783 (A).

476 *Supra* 798.

477 Insurance as policy factor influencing delictual liability, also plays a role in other jurisdictions: see ch 5 *infra*.

478 *Kruger v Coetzee* 1966 2 SA 428 (A) 430.

479 *Coronation Brick (Pty) Ltd v Strachan Construction Co (Pty) Ltd supra* 384.

480 The Constitution of the Republic of South Africa Act 108 of 1996.

481 Chapter 2 of Act 108 of 1996.

482 Midgley (1) 54. See also par 3.3.2.4 *infra*.

483 S 8 of Act 108 of 1996.

484 S 8(1).

485 S 8(2) and (3). See also ch 4 par 6.2.2 *infra*.

and reconstruction"[486], should also be reflected in our common law.[487] Chapter two therefore provides a judicial instrument to develop the law of delict. Wrongfulness can be seen as an infringement of a right or the breach of a legal duty.[488] These two concepts provide the structure for the development of principles relating to wrongfulness.[489]

3.3.2.2 Infringement of a right

In terms of the doctrine of subjective rights, wrongfulness consists of the infringement of a subjective right.[490] In terms of the dual relationship[491] that characterises every right, the holder of the right has the power to enjoy the legal object of the right without interference from others. There is a duty on others to refrain from infringing upon the holder's relation to the legal object as a correlative to the holder's capacities.[492] According to the different nature of legal objects, five categories of rights are classified: real rights, personality rights, personal rights, immaterial property rights and personal immaterial property rights.[493] Infringements of these rights are

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486 *Qozeleni v Minister of Law and Order* 1994 3 SA 625 (E) 634; *Phato v Attorney-General, Eastern Cape; Commissioner of the South African Police Services v Attorney-General, Eastern Cape* 1995 1 SA 799 (E); *Gardener v Whittaker* 1995 2 SA 672 (E) 685.

487 *Du Plessis and Others v De Klerk and Another* 1996 5 BCLR 658 (CC) 692.

488 *Minister van Polisie v Ewels* 1975 3 SA 590 (A); *Halliwell v Johannesburg Municipal Council* 1912 AD 659; *Silva's Fishing Corporation (Pty) Ltd v Maweza* 1957 2 SA 256 (A); *Regal v African Superslate (Pty) Ltd* 1963 1 SA 102 (A).

489 See Midgley (1) 56-65; Neethling *et al* 43-65; Boberg 30-57.

490 *Clarke v Hurst supra* 651.

491 The subject-object relationship and the subject-subject relationship.

492 Midgley (1) 57; Neethling *et al* 43; Van der Merwe and Olivier 54; Van der Walt 22.

493 Traditionally only the first four kinds of rights were distinguished: *Universiteit van Pretoria v Tommie Meyer Films (Edms) Bpk supra* 382. Neethling 1987 *THRHR* 316 identified **personal immaterial property rights** as the fifth category of

prima facie wrongful.[494] A justifiable interference with the relationship does not constitute an infringement of a right though, and whether an interference is justifiable or not is determined according to the reasonableness criterion.[495] Wrongfulness in the case of an infringement of a subjective right therefore entails two issues, namely (a) Interference with an interest that falls within the identified categories of rights; and (b) a criterion for determining the justifiability of an interference with the relevant subject-object relationship, which is the general *boni mores* test.[496]

3.3.2.3 Breach of a legal duty

An infringement of a subjective right is not the only criterion for unlawfulness, as damage may occur in circumstances where a clearly defined subjective right does not exist or in circumstances where, although the infringement of a subjective right is identifiable, it is more appropriate to determine whether a legal duty has been breached.[497] In such cases wrongfulness is determined by asking whether the defendant had a legal duty to to prevent the loss.[498] In cases of liability for an omission or the causing of pure economic loss, the impairment of the legal object is not *prima facie* unlawful, or no recognised legal object can be identified and it must be determined in each case whether there is a legal duty to act positively[499] or to

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subjective rights. These categories of rights are not restricted in number, new categories may be recognised and developed: see Neethling *et al* 46.

494 *Clarke v Hurst supra* 651; Neethling *et al* 47.

495 Par 3.3.2.4 *infra*.

496 Neethling *et al* 29.

497 For instance, in the case of damage caused by a negligent misrepresentation and pure economic loss: *Universiteit van Pretoria v Tommie Meyer Films (Edms) Bpk supra* 387. See also ch 6 par 2 *infra*.

498 Neethling *et al* 49 *et seq*; Midgley 59 *et seq*.

499 The failure to act positively to prevent loss does not prima facie constitute an infringement of subjective rights: see ch 6 par 4 *infra*.

avoid pure economic loss.[500]

The question whether a legal duty exists and has been breached is determined by the same test used in cases of an infringement of a right, namely the objective reasonableness criterion or the *boni mores* test.[501] In cases of wrongfulness arising from the breach of a legal duty, two issues arise, namely (a) whether there was a duty upon the defendant to act reasonably towards the plaintiff; and (b) whether the defendant breached that duty. The first issue is a conclusion of law, determined by taking all the circumstances into account.[502] The question is whether the plaintiff's interest merits judicial protection against the defendant's conduct in the circumstances.[503] The existence of a legal duty which is sometimes referred to as a duty of care,[504] must be distinguished from the "duty of care" concept which is applied during the determination of the defendant's fault or negligence.[505] In the latter instance duty of care refers to the question whether the wrongdoer exercised the standard of care that the reasonable person would have exercised in order to prevent damage (the "negligence-issue") whereas in the former instance relating to the existence of a legal duty, the question is whether the conduct was objectively reasonable in all the circumstances, including the foreseeability of harm. The "duty-issue", namely whether a duty of care is owed by the defendant is first established and thereafter the negligence-issue is determined, namely whether a breach of the duty occurred. The duty of care doctrine is foreign to Roman-Dutch law, it is an

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500 See ch 6 par 3 *infra*.

501 Neethling *et al* 50; Boberg 32.

502 *Knop v Johannesburg City Council supra* 28.

503 *Administrateur Natal v Trust Bank van Afrika Bpk supra* 832-833; *Bayer SA (Pty) Ltd v Frost supra* 568; *Standard Chartered Bank of Canada v Nedperm Bank Ltd* 1994 4 SA 747 (A) 770; *Administrateur, Tvl v Van der Merwe* supra 358.

504 Eg *Administrateur, Natal v Trust Bank van Afrika Bpk* 1979 3 SA 824 (A); *Compass Motor Industries (Pty) Ltd v Callguard (Pty) Ltd* 1990 2 SA 520 (W).

505 Neethling *et al* 139-140.

English doctrine applied with reference to the tort of negligence and should be avoided as it causes confusion between the test for wrongfulness and the test for negligence.[506]

3.3.2.4 Grounds of justification

Grounds of justification are defences which exclude the wrongfulness element of a delictual action.[507] These grounds are typical circumstances in which *prima facie* unlawful conduct is regarded as lawful in terms of the general criterion of reasonableness (the *boni mores*).[508] Although several stereotyped grounds of justification have crystallised through the years,[509] there is no *numerous clausus* of justification grounds, and new grounds may develop with regard to novel circumstances.[510] In this regard the provisions of the Constitution[511] are also relevant and a general defence of exercise of a constitutional right is likely to be advanced in the future.[512] The provisions of the Bill of Rights[513] may also be used to test the validity of a ground of justification. Any defence to an infringement

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506 Neethling *et al* 140; Boberg 279; Van der Merwe and Olivier 129-131. See also ch 5 part I par A 2.2.1 *infra.*

507 Midgley(1) 84.

508 Neetling *et al* 66; Van der Walt 40 *et seq*; Boberg 724 *et seq*; Van der Merwe and Olivier 70 *et seq.*

509 These stereotyped grounds are specific grounds with their own rules, limiting the scope of their application.

510 *Clarke v Hurst supra* 650; *Argus Printing and Publishing Co Ltd v Inkatha Freedom Party 1992 supra* 589.

511 Act 108 of 1996.

512 An example is a newspaper's defence of exercising its right to free speech, against a defamation claim: Midgley (1) 54 86. See also ch 4 par 6.3 *infra* with regard to the possible infringement of First Amendment rights by imposing strict liability on producers of information products in the United States.

513 Chapter 2 of the Constitution of the RSA Act 108 of 1996.

of a fundamental right will have to comply with the criteria set out in the limitations clause.[514] The scope of the operation of a defence must also be determined by the Constitution.[515] The historic grounds of justification applicable to the two delictual actions under discussion, namely the *actio legis Aquilia* and the Germanic action for pain and suffering, are necessity, private defence, statutory authority, public office, obedience to orders, provocation, consent to injury (*volenti non fit iniuria*), abuse of right and nuisance.[516] The grounds of justification most relevant to ES liability are **consent** and possibly the new general **constitutional defence of the exercise of a right**. Also, a *pactum de non petendo*[517] may exclude liability, although it does not as such affect the wrongfulness of an act.[518]

Consent to injury or harm is a ground of justification in terms whereof the actor cannot be held liable for the damage caused.[519] Boberg[520] defines consent in the following manner: "Consent freely and lawfully given by a person who has the legal capacity to give it justifies the conduct consented to, making lawful the infliction of of the ensuing harm."[521] This principle is contained in the maxim *volenti non fit iniuria*[522] of Roman and Roman-Dutch law,[523] which indicates either **consent to**

514 Section 36 of Act 108 of 1996: see also ch 4 par 6.2.2 *infra*.

515 *S v Makwanyane* 1995 3 SA 391 (CC) 652.

516 Neethling *et al* 66; Midgley (1) 86.

517 An agreement not to institute action: Neethling *et al* 97.

518 See *infra*.

519 See Neethling *et al* 90 *et seq*; Van der Merwe and Olivier 89 *et seq*; Boberg 724 *et seq*; Van der Walt 50 *et seq*.

520 At 724.

521 See also *R v Taylor* 1927 CPD 16 20; *Esterhuizen v Administrator, Transvaal* 1957 3 SA 710 (T) 720.

522 A willing person is not wronged.

523 Neethling *et al* 90.

injury or **consent to risk of injury**.[524] Consent should be given before the injurious conduct as approval after the act does not constitute valid consent but may amount to a *pactum de non petendo*.[525] The essential requirements for valid consent are "knowledge, appreciation and consent."[526] It must be shown that the risk of injury was known, realized and voluntarily undertaken. The consent must not be *contra bonos mores*.[527] Consent to bodily injury or to the risk of such injury is usually *contra bonos mores* except in for example, cases of participation in lawful sport and medical treatment.[528] Informed consent to medical treatment is recognised as a ground of justification.[529]

A *pactum de non petendo* is a contractual undertaking not to institute an action, wrongfulness is therefore not excluded, only the resultant action.[530] The injured party loses her remedy because the action was waived.[531] Like contractual exemption clauses, such undertakings may be invalid in the same circumstances as exemption clauses.[532]

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524 **Consent to risk of injury** must be distinguished from **voluntary assumption of risk**, which can either imply contributory intent (a ground excluding fault) or consent to risk of injury (a ground of justification): see par 3.3.3.7 *infra*.

525 *Infra*. *Cf* Neethling *et al* 91-93 for the characterstics of consent.

526 *Waring and Gillow Ltd v Sherborne* 1904 TS 340 344; see also *Lampert v Hefer* 1955 2 SA 507 (A) 509.

527 *S v Collett* 1978 3 SA 206 (RA).

528 *Boshoff v Boshoff* 1987 2 SA 694 (O). See Neethling *et al* 96; Van der Merwe and Olivier 100.

529 Strauss 12-13; Claassen and Verschoor 62.

530 Neethling *et al* 97; Van der Merwe and Olivier 101; Van der Walt 51.

531 *Jameson's Minors v CSAR* 1908 TS 575.

532 See par 2.4.2 *supra*.

3.3.3 Fault

3.3.3.1 General

Fault or blameworthiness is a subjective element and consists of negligence and intention.[533] For purposes of this study, only the former is taken into consideration.[534] The criterion which our law applies to establish when a person has acted negligently is the objective standard of the reasonable person, the *bonus paterfamilias*.[535] Neethling *et al*[536] states that the the defendant is negligent if the reasonable person in the same position would have acted differently; and according to the courts the reasonable person would have acted differently if the unlawful causing of damage was reasonably foreseeable and preventable in the circumstances. The enquiry into a person's fault can only be done after it has been established that the person acted unlawfully.[537] Before it can be determined whether a defendant's wrongful conduct is blameworthy, it must be ascertained whether the defendant has the capacity to be held accountable, in other words whether the defendant's mental ability is of such a nature that intent or negligence may be imputed to her.[538] A person is accountable if she has the necessary mental ability to distinguish between right and wrong, and if she can also act in accordance with such appreciation.[539]

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533 Midgley(1) 114 *et seq*; Neethling *et al* 113 *et seq*; Van der Merwe and Olivier 110 *et seq*; Boberg 268 *et seq*; Van der Walt 60 *et seq*.

534 See ch 1 par 1.4 *supra*.

535 Neethling *et al* 122; Van der Walt 65; Boberg 274; Van der Merwe and Olivier 126.

536 At 122.

537 It makes no sense to blame someone who has acted lawfully: Neethling *et al* 113.

538 Neethling *et al* 114; Van der Walt 60; Van der Merwe and Olivier 112; Boberg 271.

539 *Weber v Santam Versekeringsmaatskappy Bpk* 1983 1 SA 381 (A) 389 403 410.

3.3.3.2 Test for negligence

The test for negligence is found in the well-known *dictum* of Holmes JA in *Kruger v Coetzee*:[540]

> For the purposes of liability *culpa* arises if -
>
> (a) a *diligens paterfamilias* in the position of the defendant -
>
> (i) would foresee the reasonable possibility of his conduct injuring another in his person or property and causing him patrimonial loss; and
>
> (ii) would take reasonable steps to guard against such occurrence; and
>
> (b) the defendant failed to take such steps.[541]

The reasonable person or the *diligens paterfamilias* posesses all the qualities which the community expects from its members, and is neither exceptionally clever or careful; nor dull-witted or reckless. Although every person is required to conform to the objective standard of the reasonable person, exceptions are made in the case of certain categories of actors, such as children and experts. The situation of experts is very relevant to the issue of ES liability[542] and warrants further discussion.[543]

The test for negligence consists of two elements, namely reasonable foreseeability and reasonable preventability of damage.[544] With regard to the nature of the foreseeability test, there are two views, namely the abstract approach and the

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540 1966 2 SA 428 (A).

541 See also *Santam Versekeringsmaatskappy Bpk v Swart supra* 819; *Ngubane v SA Transport Services* 1991 1 SA 756 (A) 776.

542 The knowledge base of an ES is compiled by the DE, who is an expert in her field of knowledge: see ch 2 par 8.1.2 *supra*.

543 See par 3.3.3.3 *infra*.

544 Neethling *et al* 130.

concrete or relative approach.[545] In terms of the abstract approach it is a sufficient requirement for negligence that damage in general was reasonably foreseeable,[546] whereas the concrete approach requires that a person's conduct may only be described as negligent in regard to a specific consequence, therefore the occurrence of a particular consequence must be reasonably foreseeable.[547] It is not possible to formulate exact criteria for the application of the foreseeability test .[548] However, as a broad guideline it can be stated that the foreseeability of harm depends on the magnitude of the risk created by the actor's conduct.[549] With regard to the second element of the test for negligence, namely whether the reasonable person would have taken precautionary steps to prevent the damage from occurring, such action would depend on the nature and extent of the risk in the wrongdoer's conduct,[550] the seriousness of the damage,[551] the relative importance and utility of the wrongdoer's conduct and the cost and difficulty of taking precautionary measures.[552]

3.3.3.3 Professional negligence

Professional negligence refers to the negligence of an expert. In the case of an expert

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545 *Ablort-Morgan v Whyte Bank Farms (Pty) Ltd* 1988 3 SA 531 (E).

546 *Botes v Van Deventer* 1966 3 SA 182 (A) 191; *Herschel v Mrupe* 1954 3 SA 464 (A); Van Der Walt 68. Boberg 276 does not favour the abstract approach as it underlies the concept of remoteness of damage which is a factor limiting liability, and not a factor by which to determine fault.

547 Neethling *et al* 131; Boberg 276-277; *Ablort-Morgan v Whyte Bank Farms (Pty) Ltd* 1988 3 SA 531 (E) 536.

548 Neethling *et al* 132.

549 Van der Walt 77; *Butters v Cape Town Municipality* 1993 3 SA 521 (C).

550 *Ngubane v SA Transport Services* 1991 1 SA 756 (A) 776; *Herschel v Mrupe supra* 477; Van Der Walt 78 -79.

551 *Lomagundi Sheetmetal and Engineering (Pvt) Ltd v Basson* 1973 4 SA 523 (RA); *Khupa v SA Transport Services* 1990 2 SA 629 (W).

552 *Gordon v Da Mata* 1969 3 SA 285 (A).

or a professional such as a doctor, attorney, builder, pilot, etcetera, the test for negligence in regard to the exercise of the expert activity, is the test of the reasonable expert.[553] The only difference between this test and the reasonable person test referred to above, lies in the added measure of related experience. The standard of experience is reasonable because "the general level of skill and diligence possessed and exercised at the time by the members of the branch of the profession to which the practitioner belongs",[554] is taken into account and not the highest degree of expertise in the relevant profession.[555] In these instances the professional liability of defendants is at stake and actions based on "malpractice" are instituted against them.[556]

In terms of the maxim *imperitia culpae adnumeratur*, ignorance or lack of skill is deemed to be negligent.[557] The principle applies when a person undertakes an activity for which expert advice is necessary while she knows or should have known that she lacks such expert knowledge.[558] A problem which frequently arises with regard to professional negligence is the foreseeability of the damage, which is essentially applied to limit the liability of the professional, which forms part of the legal causation reqirement.[559]

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553 Neethling *et al* 129; Van der Merwe and Olivier 140; Boberg 346; Van der Walt 71.

554 *Van Wyk v Lewis* 1924 AD 438 444.

555 A body of case law has developed with regard to negligence in various different professions. In the medical and legal professions especially, various typical duties have crystallised: Neethling *et al* 129 fn 87. See also Weir 6-3 for an international perspective. See also ch 6 par 6 *infra* in regard to professional liability in SA law.

556 See ch 6 par 6 *infra*.

557 Neethling *et al* 130; Boberg 346-347; Van der Walt 70-71.

558 *Simon's Town Municipality v Dews* 1993 1 SA 191 (A); *Savage and Lovemore Mining (Pty) Ltd v International Shipping Co (Pty) Ltd* 1987 2 SA 149 (W) 210.

559 See par 3.3.4.3 *infra*.

3.3.3.4 Particular factual circumstances

Negligence is determined in the light of all the surrounding circumstances of a particular case.[560] The regular occurrence of typical factual situations have led to a body of findings and rulings regulating such situations, which although not binding, enjoys persuasive power.[561] Such typical factors apply in cases involving inherently dangerous things, sudden emergencies, contributory negligence, normal practices of the community and specific statutory provisions. In this regard the existence of basic product safety standards (for example ISO 9000),[562] set and validated by recognised organisations such as the SABS[563] or *DIN*,[564] play an important role in the determination of negligence. Compliance with such standards may be indicative of the reasonable conduct of the defendant, excluding negligence in the circumstances.[565]

3.3.3.5 Proof of negligence

The onus is on the plaintiff to prove on a preponderance of probabilities that the defendant was negligent. The maxim *res ipsa loquitur*[566] refers to a situation where an inference of negligence can be made from the facts.[567] It is usually applied to cases where the only known facts with regard to negligence, consist of the

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560 Neethling *et al* 136 *et seq*; Boberg 355 *et seq*; Van der Walt 76 *et seq*.

561 Boberg 367. For example, negligence in cases involving motor vehicles: see Boberg 375-377.

562 A series of international standards for software systems: see ch 6 par 6 *infra*.

563 South African Bureau of Standards: see ch 6 par 6 *infra*.

564 *Deutsches Institut für Normung*: see ch 5 part III par A 5.5.2 *infra*.

565 See ch 6 pars 3 and 6 *infra*.

566 "The facts speak for themselves".

567 Hoffmann and Zeffert 551; Schmidt 163; Schwikkard *et al* 356.

occurrence itself.[568] For example, in *Arthur v Bezuidenhout and Mieny*[569] the appellant's lorry suddenly swerved to the wrong side of the road and collided with the respondent's vehicle, killing both drivers. As there was no clear explanation of the cause of the accident, the court made a finding of *res ipsa loquitur*, and negligence was inferred. An inference of negligence from the nature of the facts is only permissible while the cause of the occurrence is unknown. As soon as the cause is known, the basis for the use of *res ipsa loquitur* no longer exists, and the court has to decide in the normal manner whether the proven facts indicate negligence or not.[570] *Res ipsa loquitur* is not a presumption of fact based on a rule of law, it actually refers to a kind of common sense reasoning.[571] As such, the maxim does not affect the incidence of the burden of proof, neither does it create a *prima facie* case for the plaintiff.[572] Where an inference of negligence is drawn an evidential burden is put upon the defendant, not to prove that she was not negligent, but merely to show facts consistent with an inference that does not involve negligence, or to adduce evidence which raises a reasonable doubt.[573] Holmes JA summed up the matter as follows in *Sardi v Standard and General Insurance Co Ltd*:[574]

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568 *Arthur v Bezuidenhout and Mieny* 1962 2 SA 566 (A); *Sardi v Standard and General Insurance Co Ltd* 1977 3 SA 776 (A) 778; *Osborne Panama SA v Shell & BP South African Petroleum Refineries (Pty) Ltd* 1982 4 SA 890 (A) *Madyosi v SA Eagle Insurance Co Ltd* 1990 3 SA 442 (A); *Stacy v Kent* 1995 3 SA 344 (E).

569 *Supra*.

570 *Groenewald v Conradie* 1965 1 SA 184 (A) 188; Hoffman and Zeffert 553. See also *Madyosi v SA Eagle Insurance Co Ltd supra* 445 where the court found that the maxim did not apply where a bus had overturned after a tyre burst.

571 Hoffmann and Zeffert 552; Schwikkard *et al* 357.

572 *Arthur v Bezuidenhout and Mieny supra* 574; *Sardi v Standard and General Insurance Co Ltd supra* 780; *Pringle v Administrator Transvaal* 1990 2 SA 379 (W).

573 *Arthur v Bezuidenhout and Mieny supra*; Hoffman and Zeffert 554; Schwikkard *et al* 357.

574 *Supra* 780.

> The person against whom the inference of negligence is sought to be drawn, may give or adduce evidence seeking to explain that the occurrence was unrelated to any negligence on his part. The court will test the explanation by considerations such as probability and credibility.... At the end of the case, the court has to decide whether, on all the evidence and the probabilities and the inferences , the plaintiff has discharged the onus of proof on the pleadings on a preponderance of probability , just as the court would do in any other case concerning negligence.

In *Van Wyk v Lewis*[575] the maxim was explicitly rejected by the court in medical negligence cases.[576] In *Bayer South Africa (Pty) Ltd v Viljoen*[577] the Appellate Division held that there may be policy reasons to justify the application of the doctrine of *res ipsa loquitur* in cases involving products liability.[578]

3.3.3.6 Contributory negligence

In terms of our common law the fault of the plaintiff excluded a claim for damages from a defendant who also had fault.[579] The contributory negligence[580] of the plaintiff therefore precluded the plaintiff from recovering compensation from a negligent defendant. Under influence of English law our courts adopted the so-called "last opportunity" rule in terms whereof action could only be instituted against the party whose negligence was the decisive cause of the accident. The Apportionment of Damages Act[581] now regulates the position and allows the court to apportion the

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575 1924 AD 438.

576 Strauss 271; Claassen and Verschoor 30.

577 1990 2 SA 647 (A).

578 See ch 6 par 5.2.3 *infra*.

579 The all-or-nothing-rule: see Neethling *et al* 146.

580 Strictly speaking the term contributory negligence is incorrect as it implies a wrongful act which is impossible in the case of an act towards oneself: see Neethling *et al* 151.

581 Act 34 of 1956.

damage of each party in accordance with their relative degrees of fault.[582] The Act abolishes the all-or-nothing principle of common law.[583] The criterion used by the courts to apportion the damages is the reasonable person test for negligence and the method of determining who should bear which portion of the damage, entails a comparison of the respective degrees of negligence of the parties involved.[584] Section 1(1)(a) of the Act is also applicable to contributory negligence causing an increase of the damage suffered.[585] This means that a defendant whose negligence did not contribute to the event causing the damage but did contribute to an increase in the damage, is subject to the apportionment of damage suffered.[586]

The effect of contributory negligence of the deceased or injured party on the dependants' action is ruled by the Apportionment of Damages Amendment Act.[587] In terms of this Act the third party and the deceased in the case of prejudice suffered as a result of death of a breadwinner, as well as the third party and the breadwinner in the case of prejudice suffered as a result of injury of the breadwinner, are deemed to be joint wrongdoers.[588]

The Act does not apply in cases of liability without fault.[589] The negligence of a

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582 S 1(1)(a).

583 S 1(1)(b).

584 *South British Insurance Co Ltd v Smit* 1962 3 SA 826 (A); *Jones v Santam Bpk* 1965 2 SA 542 (A). See also *AA Mutual Insurance Association Ltd v Nomeka* 1976 3 SA 45 (A) and the critique by Neethling *et al* 149-151 with regard to the conflicting approaches followed by our positive law when apportioning damages.

585 An example is the "failure to wear seat belt" cases: *Union National South British Co Ltd v Vitoria* 1982 1 SA 444 (A); *General Accident Versekeringsmaatskappy SA v Uijs* 1993 4 SA 228 (A). *Cf* Neethling et al 152.

586 *Ibid.*

587 Act 58 of 1971.

588 S 1(a)(1B) of Act 58 of 1971. See Neethling *et al* 261 *et seq.*

589 Neethling *et al* 148; Van der Walt 87.

third party cannot serve as a defence to a delictual action.[590] The defendant has to prove a defence of contributory negligence by the plaintiff, on a balance of probabilities.[591]

3.3.3.7 Contributory intent

A plaintiff who wilfully exposes herself to risk of injury and whose conduct is consciously unreasonable, in that it is not directed towards achieving a lawful goal, acts intentionally with regard to the injury she suffers.[592] As in the case of consent to risk of injury as a ground of justification, this situation is also referred to as voluntary assumption of risk. However, the difference between voluntary assumption of risk with regard to contributory fault and voluntary assumption of risk in the sense of consent, is that the former is a ground that cancels fault and not a ground of justification which cancels wrongfulness. In terms of our common law the plaintiff's contributory intent cancels the defendant's negligence.[593] Therefore, a plaintiff who intentionally contributes to her own loss while the defendant was merely negligent, forfeits her claim.[594]

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590 Neethling *et al* 151. See par 3.5 *infra* with regard to the position of a defendant and a third party who are joint wrongdoers.

591 *Schoeman v Unie en SWA Versekeringsmaatskappy Bpk* 1989 4 SA 721 (C).

592 Neethling *et al* 154 *et seq*; Van der Merwe and Olivier 167 *et seq*; Boberg 740 *et seq*; Van der Walt 93.

593 Van der Walt 93; Neethling *et al* 155. This common law principle is not affected by Act 34 of 1956 which, it seems, also does not provide for the defence of contributory intent: see Neethling *et al* 148. The intent of the defendant is not relevant for purposes of this discussion: see ch 1 par 1.4 *supra*.

594 *Wapnick v Durban City Garage* 1984 2 SA 414 (D) 418.

3.3.4 Causation

3.3.4.1 General

Causation involves two elements, namely factual causation and legal causation.[595] Factual causation entails the determination whether the conduct of the defendant caused the damage suffered by the plaintiff. The question whether such a causal nexus exists in a particular case, is a question of fact which depends on the particular circumstances. Because a single act may set in motion an endless chain of harmful events, it is only fair to limit the liability of a defendant. Legal causation entails the determination for which of the harmful consequences actually caused, the wrongdoer should be held liable. This distinction between factual and legal causation is expressed as follows in *Tuck v Commissioner for Inland Revenue*:[596]

> (I)t is generally recognised that causation in the law of delict gives rise to two distinct enquiries. The first, often termed causation in fact or factual causation is whether there is a factual link of cause and effect between the act or omission of the party concerned and the harm for which he is sought to be held liable; and in this sphere the generally recognised test is that of the conditio sine qua non or the but for test. This is essentially a factual enquiry. Generally speaking no act or omission can be regarded as a cause in fact unless it passes this test. The second enquiry postulates that the act or omission is a conditio sine qua non and raises the question as to whether the link between the act or omission and the harm is sufficiently close or direct for legal liability to ensue; or whether the harm is, as it is said, 'too remote'. This enquiry (sometimes called 'causation in law' or 'legal causation') is concerned basically with a juridical problem in which considerations of legal policy may play a part.

3.3.4.2 Factual causation

A defendant cannot be held delictually liable if it is not proven that her conduct **in fact**

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595 Midgley(1) 151; Neethling *et al* 159 *et seq*; Van der Walt 95 *et seq*; Van der Merwe and Olivier 196 *et seq*; Boberg 380 *et seq*.

596 1988 SA 819 (A) 832-833 *per* Corbett JA.

caused the damage of the person who suffered harm.[597] The test which is used to determine factual causation is the *conditio sine qua non* theory.[598] The *conditio sine qua non* test or the "but for" test means that in order to establish whether X was the cause of Y, X must be mentally eliminated and if Y then falls away, X is a cause of Y. If Y is still there when X is eliminated, X is not a cause of Y.[599] In other words, to apply the *conditio sine qua non* test, one asks whether the plaintiff's harm would have occurred but for the defendant's conduct.[600]

3.3.4.3 Legal causation

As stated before,[601] it is generally accepted that a wrongdoer cannot be held liable without limitation for **all** the harmful consequences actually caused by her act.[602] Under normal circumstances, the harm caused by the wrongdoer falls so clearly within the limits of her liability, that an investigation into legal causation is unnecessary.[603] Legal causation becomes an issue in cases where there is a whole chain of injurious consequences set in motion by the wrongful conduct, and it must be determined if the wrongdoer should be held liable for the "remote" or

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597 *Siman and Co (Pty) Ltd v Barclays National Bank Ltd* 1984 2 SA 888 (A) 907; *Bayer South Africa (Pty) Ltd v Viljoen* 1990 2 SA 647 (A). See Neethling *et al* 160; Boberg 380; Van der Walt 95; Van der Merwe and Olivier 196.

598 *Minister van Polisie v Skosana* 1977 1 SA 31 (A); *S v Daniëls* 1983 3 SA 275 (A); *S v Van As* 1967 4 SA 594 (A); *Siman and Co (Pty) Ltd v Barclays National Bank Ltd supra* 914; *International Shipping Co v Bentley* 1990 1 SA 680 (A).

599 Neethling *et al* 161; Van der Merwe and Olivier 197.

600 Boberg 380. For criticism against this theory, see Neethling *et al* 162-166.

601 Par 3.3.4.1 *supra*.

602 *Tuck v Commissioner for Inland Revenue supra* 832.

603 Legal causation is not the only way in which lability in delict is limited. The investigation into all the elements of a delict, whereby **liability** is established, also serves to limit liability. Especially the elements of wrongfulness and fault "limits" liability: see Neethling *et al* 171; *Administrateur, Natal v Trust Bank van Afrika Bpk supra* 833.

additional consequences ("ulterior harm").[604] The question of legal causation is also referred to as the problem of "remoteness of damage" or the problem of "imputability of harm".[605]

The courts did not use a single inflexible criterion to determine legal causation, neither did they follow a uniform approach.[606] Even delictual law writers had different opinions in this regard.[607] The most popular theories of legal causation (the application of which has ample judicial authority)[608] are the theory of adequate causation, the direct consequences theory, the theory of fault, and the reasonable foreseeability criterion. Until 1990 it was accepted that the courts preferred the reasonable foreseeability criterion,[609] but now that the Appellate Division in *S v Mokgethi*[610] has expressed a preference for a flexible approach in regard to legal causation, the courts will follow suit.[611] In the *Mokgethi* decision[612] it was held that there is no single general criterion for legal causation which can be applied to all factual situations. Therefore a flexible approach is suggested which entails

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604 *Cf* Van der Merwe and Olivier 201 *et seq*; Van Oosten 1982 *De Jure* 239 *et seq* and 1983 *De Jure* 36 *et seq*. See also *Alston v Marine and Trade Insurance Co Ltd* 1964 4 SA 112 (W); *Mafesa v Parity Versekeringsmaatskappy Bpk* 1968 2 SA 603 (O).

605 Neethling *et al* 170.

606 Van der Walt 98; Boberg 440; Van der Merwe and Olivier 216; Van Oosten 1982 *De Jure* 253 and 1983 *De Jure* 36; Neethling *et al* 171.

607 Neethling *et al* 194; Snyman 86; Van der Merwe and Olivier 196; Boberg 447; Van Oosten 1983 *De Jure* 57; Van der Walt 218.

608 See Neethling *et al* 172 *et seq*.

609 Neethling *et al* 194; Van der Walt 102; Boberg 445 447; Van der Merwe and Olivier 216 223-4.

610 1990 1 SA 32 (A).

611 The principles adopted in *S v Mokgethi supra* was confirmed in *International Shipping Co (Pty) Ltd v Bentley* 1990 1 SA 680 (A). See also *Bonitas Medical Aid Fund v Volkskas Bank Ltd* 1992 2 SA 42 (W) 49.

612 *Supra* 36.

determining whether a sufficiently close relationship exists between the wrongdoer's conduct and its consequences in order that such consequence may be imputed to the wrongdoer according to policy considerations based on reasonableness, fairness and justice. In determining legal causation within the framework of this flexible approach, the existing criteria for legal causation (the legal causation theories) may be utilised.[613]

3.3.5 Damage

"Damage" refers to the broad concept of patrimonial as well as non-patrimonial loss suffered by the plaintiff (*damnum*).[614] As such it refers to harm suffered in a person's patrimony (patrimonial loss: *vermoënskade*) as well as to harm to a person's personality interests (non-patrimonial loss: *persoonlikheidsnadeel*), both losses to be compensated for in money.[615] Pure economic loss refers to patrimonial loss that does not result from injury to the plaintiff's person or property[616] and is compensable in terms of the Aquilian action.[617]

"Damages" is the monetary compensation awarded to the plaintiff by the court.[618] The object of an award of damages is to place the plaintiff in the position she would

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613 *Per* Van Heerden JA *supra* 40-41.

614 Neethling et al 197 *et seq*; Boberg 475 *et seq*.

615 Neethling *et al* 202; Boberg 475.

616 See Neethling *et al* 280; Boberg 103; Van der Walt 35.

617 *Greenfield Engineering Works (Pty) Ltd v NKR Construction (Pty) Ltd* 1978 4 SA 901. See ch 6 par 3 *infra*.

618 For a discussion of the "Law of damages" in general, see Visser and Potgieter. The latter at 22 define damage as:

> the diminution, as a result of a damage-causing event, in the utility or quality of a patrimonial or personality interest in satisfying the legally recognised needs of the person involved.

have been had the delict not been committed. With regard to patrimonial loss, damage is represented by the difference between the hypothetical pecuniary position of the injured party if the delict had not occurred and the pecuniary position after the commission of the delict,[619] consisting of actual losses and expenses (*damnum emergens*), such as medical expenses, as well as the deprivation of future financial benefits (*lucrum cessans*), such as a loss of profits.[620] With regard to non-patrimonial loss in the present context, damage consists of an impairment of personality interests such as feelings of pain and suffering, emotional shock and loss of the amenities of life. These losses may also already have been sustained or still to be sustained in the future. Non-patrimonial loss is determined by comparing the quality of the personality interests before and after the delict was committed, and then providing a type of imperfect compensation, as the affected interests do not possess a natural equivalent in money.[621]

3.3.6 Conclusion

Damage caused by the use of ES's will be compensable in terms of the South African law of delict if such use constitutes a wrongful and culpable act that causes harm.[622] Damages for patrimonial loss suffered can be claimed under the Aquilian action, and the action for pain and suffering can be instituted for non-patrimonial loss suffered.[623]

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619 *Santam Versekeringsmaatskappy Bpk v Byleveld* 1973 2 SA 146 (A).

620 Boberg 478.

621 Neethling *et al* 32.

622 See par 3.1 *supra*.

623 See par 3.2 *supra*.

3.3.6.1 The use of a defective expert system

Liability of the producers

The basic types of errors which may occur when ES's are used were pointed out in chapter 2 and the respective parties who may incur possible liability as a result of such errors, were identified.[624] The developers of an ES are responsible for defects in the system in the same way as the manufacturer of products in a situation of manufacturer's or products liability. Manufacturer's liability in South African law is grounded on the general principles of delict.[625] In this regard the act is constituted by the conduct of the developer which conduct consists of the control and organisation of the production process.[626] In the same way the developer of any part of an ES, for example the KE who designed the inference engine or the DE who provided the knowledge base may be liable for defective components of the ES. The activity of control may take the form of a commission or omission on the part of the developer. Where a legal entity such as a software house produces a defective ES through the unlawful and negligent conduct of one of its human members, the software house may be deemed to have acted if the act was performed at the command of the software house.[627] In the case of an ES with an intellectual output consisting of information,[628] such as the Intelligent Assistant and the Self-Help System, the act of the developers may consist of a statement instead of physical conduct, constituting a negligent misrepresentation.[629] The conduct of the DE, who

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624 See ch 2 par 9.2.2 *supra*.

625 See ch 6 par 5 *infra*.

626 See par 3.3.1 *supra*.

627 *Ibid*.

628 See ch 2 par 10.1.2 *supra*.

629 See par 3.3.1 *supra*.

provides the expert knowledge for the production of the knowledge base,[630] may consist of a misrepresentation where such knowledge is defective and as a result thereof, damage is caused.

In terms of the test for wrongfulness (the *boni mores* test), the developers' conduct will be unlawful if a subjective right has been infringed or a legal duty has been violated by the use of the defective ES.[631] Where personal injury or property damage is caused by negligent misrepresentation of the developer, the conduct is *prima facie* unlawful in that the injured party's right to personality has been infringed.[632] If the misrepresentation made is in the form of an omission, breach of a legal duty must be established as the infringement of subjective rights are not sufficient to constitute wrongful conduct.[633] Where damage in the form of an infringement of subjective rights is caused by a defective ES, unlawfulness of the manufacturer's conduct must also be found in the breach of a legal duty.[634] This kind of damage may occur in many ES's applied in safety-critical situations such as MES's, fly-by-wire systems, etcetera.[635] If pure economic loss is sustained, for example in the case of a defective tax advisory Self-Help System, or in the case of the professional user who suffers financial damage as a result of using a defective Intelligent Assistant which caused personal injury to the user's client, the wrongfulness of the defendant's conduct will also have to be found in the breach of a legal duty, determined according to the *boni mores*.[636] A ground of justification

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630 See ch 2 par 8.2.1 *supra*.

631 See par 3.3.2.1 *supra*.

632 See par 3.3.2.2 *supra*. The unlawfulness of a manufacturer's conduct is rather seen as a violation of a legal duty: Neethling *et al* 306.

633 See par 3.3.2.3 *supra*.

634 *Ibid*.

635 Such damage may be incurred from the use of any of the three types of ES's identified: see ch 2 par 11 *supra*.

636 See pars 3.3.2.3 and 3.3.5 *supra*.

may be found in the injured party's consent to injury or to the risk of injury if it is proved that such risk was voluntarily and knowingly undertaken before the injury occurred.[637] Since consent to bodily injury is illegal except in the case of medical treatment, such consent will only justify the causing of damage to property or pure economic loss.[638] Personal injury caused by a defective MES may therefore not be compensable if a valid consent to risk of injury was given.

The producers will only be liable for the damage caused unlawfully if they acted negligently.[639] According to the test for negligence, the producers will be negligent if a reasonable person in their position would have acted differently in foreseeing the damage and preventing it from occurring.[640] In other words, the reasonable foreseeability and preventability of damage in each case have to be determined. The producers' negligence will be determined according to the standard of skill exercised by other software producers and in this regard product standards and quality assurance procedures play a definite role. If the application of such standards and assurance procedures are followed by the reasonable software expert and producer, non-compliance may indicate negligence.[641] A developer will be negligent if she produces an ES without the necessary expert knowledge.[642] This situation will arise when an unqualified or unknowledgeable person acts as the DE in the production of an ES. In the case of a products liability claim, proof of negligence on the part of the software developer may be difficult due to the highly technical production process. Our courts have held that an inference of negligence may be made after application

637 See par 3.3.2.4 *supra*.

638 See par 3.3.2.4 *supra*.

639 See par 3.3.3.1 *supra*.

640 See par 3.3.3.2 *supra*.

641 See par 3.3.3.3 *supra*.

642 See par 3.3.3.3 *supra*.

of the *res ipsa loquitur* maxim.[643] If the plaintiff was contributorily negligent in causing the damage, as would be the case where the user of a defective ES negligently used the ES incorrectly, the damage caused by the developer and the user will be apportioned in terms of the Apportionment of Damages Act.[644] The contributory negligence of the professional user will not serve as a defence in a product liability claim of the injured client against the developer.[645] However, an injured user who intentionally used an ES in an activity causing damage, or, who in a state of recklessness exposed herself wilfully to the risk of injury, excludes the defendant's negligence.[646] In such a case the developer or the user will not be delictually liable for the harm suffered by the user or injured party, respectively.[647]

In the case of use of a defective ES Machine or Self-Help System it will usually not be difficult to prove that the loss suffered was factually and legally caused by the defective software.[648] More problematical is the situation where damage is caused by the use of a defective Intelligent Assistant which entails the intervention of a professional user.[649] Chances are that some of the damage was caused by the negligence of the professional user in using a defective system. In terms of the *conditio sine qua non* theory it is possible that the conduct of both the user and the developers caused the damage and they will be held liable as joint wrongdoers. In terms of the flexible approach to determine legal causation,[650] it is however also

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643 See par 3.3.3.5 *supra*.

644 Act 34 of 1956: see par 3.3.3.6. *supra*.

645 See par 3.3.3.6 *supra*.

646 See par 3.3.3.7 *supra*.

647 This is a situation of voluntary assumption of risk that excludes fault and not unlawfulness: see par 3.3.3.4 *supra*.

648 See ch 2 par 11 *supra*.

649 See ch 2 par 11 *supra*.

650 *S v Mokgethi supra*: see par 3.3.4.3 *supra*.

possible to regard the user's intervention as a *novus actus*, breaking the chain of causation between the developer and the damage caused, and holding only the user liable. However, each case will have to be decided on its own merits and the outcome will differ according to the circumstances.

The injured party will be able to claim damages for any type of loss suffered as a result of the use of the defective ES.[651]

Since the supplier is not involved in the production of the software, there is no act of manufacturing upon which the supplier may incur manufacturer's liability, neither has a misrepresentation been made by the supplier.[652] However, it has been held that where a defective product that caused damage was supplied, the supplier may incur delictual liability if there was a duty on the supplier to inspect the product and she failed to do so.[653]

Liability of the users

The user of a defective ES will be liable towards an injured party for damage caused if a subjective right has been infringed or if a legal duty has been breached in using such a system[654] and if the user was negligent in using such a defective ES.[655] Where a professional relationship exists between the user and the injured party, such as is the case when an Intelligent Assistant is used, the professional negligence of

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651 See par 3.3.5 *supra*.

652 See ch 6 par 5 *infra*.

653 See *A Gibb and Son (Pty) Ltd v Taylor and Mitchell Timber Supply Co (Pty) Ltd* 1975 2 SA 457 (W). See also ch 6 par 5.2.2.1 *infra*.

654 See par 3.3.2.1 *supra*.

655 See par 3.3.3.1 *supra*.

the user is at stake.[656]

3.3.6.2 The incorrect use of an expert system

A person who is injured by the incorrect use of an ES, will have a claim against the user of the ES if the requirements for a delict, as stated above, are met. The incorrect use of an ES incurs the same liabilities with regard to the user as the use of a defective ES.[657]

3.3.6.3 The non-use of an expert system

The failure to use an ES may either constitute a commission or omission.[658] It will be a commission in the case of a user who has control of an ES, fails to use the system in a situation where a reasonable person would have used the ES. An example would be the pilot who fails to switch to the fly-by-wire ES under her control in circumstances where she herself becomes unable to pilot the aircraft. Such failure actually constitutes negligent positive conduct.[659] On the other hand, a person who knows of a MES that would be of assistance in a particular emergency situation and fails to use such a system, will have committed an omission if there was a duty on the person to act positively to prevent harm.[660] Such a person will only be liable for damage caused by the failure to use an ES if a legal duty rested on this person to use the ES to prevent harm from occurring, and the person failed to comply with this duty.[661] In the example of the MES a doctor who fails to use such a system

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656 See par 3.3.3.3 *supra*.

657 See par 3.3.6.1 *supra*.

658 See par 3.3.1 *supra*.

659 *Ibid*.

660 *Ibid*.

661 See par 3.3.2.3 *supra*.

with regard to a patient, will have committed an omission.[662] The question whether a duty to use an ES exists, is determined according to the legal convictions of the community, in other words the *boni mores* test is applied.[663]

3.4 Strict liability

Although our law of delict is firmly based on the fault theory,[664] the ever-increasing mechanisation and expanding technological development which have occurred since the last century are showing this theory to be increasingly inadequate in the light of the growing risk of harm to individuals who are exposed to potentially dangerous situations arising from for example the advent of electricity, nuclear power, motor vehicles and aeroplanes. The inherent danger of damage may sometimes be out of all proportion to the degree of negligence that caused it, and it may often be impossible for the victim to prove fault on the part of those who control the dangerous object. For this reason there has been a movement all over the world towards the expansion of the field of delictual liability without fault,[665] also called risk or strict liability.[666]

3.4.1 The basis for liability without fault

The justification for liability without fault is found in various factors from which the following two theories have emerged: (1) the interest or profit theory which is

662 It is of course also possible to view the same conduct by the doctor as professional negligence: see par 3.3.3.3 *infra*.

663 See par 3.3.2.3 *supra*.

664 Neethling *et al* 341.

665 The statement that such liability cannot be delictual because delictual liability is always based on fault, is criticised by Hosten *et al* 844 fn 20. *Cf* Van der Walt 1968 *CILSA* 64; Neethling *et al* 343; Van der Merwe and Olivier 486.

666 Neethling *et al* 341-361; Hosten *et al* 843-848. See also ch 5 *infra* with regard to the position in the foreign legal systems discussed.

unacceptable because it depends on the profitability of the perpetrator's activity;[667] and (2) the risk or danger theory whereby the increased potential for harm as a result of the person's activities justifies holding her liable even in the absence of fault. The latter theory depends on the legal convictions of society,[668] as implemented through legislation and cases. Although it is criticised[669] because of the difficulty to ascertain whether the increase of potential harm in specific circumstances is considerable enough to warrant strict liability, Neethling *et al*[670] finds this theory more acceptable than the profit theory as almost all human activities can be interpreted as being in one's own interest. According to them, this theory provides a satisfactory substantiation for most strict liability instances recognised in our law.[671] Strict liability for damage caused by the use of an ES can be justified under the risk theory if the legal convictions of the community so indicate. Instances of strict liability have the following general characteristics in common:

(a) **Fault** is not required for liability in claims for compensation;

(b) *Vis maior* and **fault on the part of the injured person** are recognised defences;

(c) Activities that can create **extraordinary increases in the risk of harm** to the community are usually involved;

(d) In instances of strict liability imposed by legislation, the extent of the liability imposed is limited by fixing **maximum amounts of compensation.**

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667 According to this theory a person who acts to the advantage of her own economic interest is responsible for the harm caused by her actions: Neethling *et al* 342.

668 Van der Walt 1968 *CILSA* 55.

669 Van der Merwe and Olivier 564.

670 At 342.

671 *Ibid.* See par 3.4.2 *infra* for the instances of strict liability found in our law.

(e) Compensation is restricted in most cases to damage to **life, limb and property**.

3.4.2 Forms of liability without fault in South African law

In South African law instances of strict liability arise from common law, the courts and the legislature.[672] Examples of common law instances are found in the various Roman law actions for damage caused by animals[673] and damage caused by objects thrown from buildings. Examples of common law instances derived from English law are actions for damage caused by nuisance and actions based on vicarious liability in the form of an employer-employee relationship.[674] Instances of strict liability developed by the courts are found in actions for damages based on the wrongful deprivation of liberty,[675] the wrongful attachment of property[676] and the liability of the press for defamation.[677] It will also be seen during the comparative law investigation that **products liability** is regarded as a form of strict liability in some circumstances by certain foreign jurisdictions.[678] In these cases existing rules are altered to accommodate novel factual situations in circumstances where there is a glaring disjunction between law and social reality.[679] An example is the recognition

672 Neethling *et al* 343 *et seq*.

673 The *actio de pauperie*, the *actio de pastu* and the *actio de feris*. *Cf* Neethling *et al* 343 *et seq*.

674 The basis of liability for damage caused by nuisance is controversial. See Neethling *et al* 350; Van der Merwe and Olivier 500 *et seq*.

675 *Donono v Minister of Prisons* 1973 4 SA 259 (C) 262; *Minister of Justice v Hofmeyr* 1993 3 SA 131 (A) 154.

676 *Trust Bank van Afrika Bpk v Geregsbode, Middelburg* 1966 3 SA 391 (T) 393.

677 The owner, publisher, printer and editor are liable for defamation in the absence of intention or negligence: *Pakendorf v De Flamingh* 1982 3 SA 146 (A) 156-158.

678 Ch 5 *infra*.

679 Van Aswegen 1993 *THRHR* 186.

of strict liability of the press for defamation.[680] Strict liability via legislation occur in the provisions of various acts, namely the Transport Services Act,[681] the Aviation Act,[682] the Nuclear Energy Act,[683] and the Electricity Act.[684] Where damage is caused by the use of ES's applied in circumstances which fall under any of the abovementioned statutory provisions, strict liability may be incurred towards the injured party.[685]

680 *SAUK v O'Malley* 1977 3 SA 394 (A); *Pakendorf v De Flamingh* 1982 3 SA 146 (A).

681 S 2(1) of Act 9 of 1989.

682 S 11(2) of Act 74 of 1962.

683 S 41(1) of Act 92 of 1982.

684 S 19 of Act 54 of 1986.

685 See ch 6 par 8 *infra* for a full discussion.

CHAPTER 4

RELATED TOPICS

1. Introduction

This chapter contains a brief discussion of specific topics related to the subject matter of the study, that are either not dealt with in detail in this thesis, but are identified as topics requiring further attention, or strictly speaking, do not form part of a discussion of civil liabilities incurred through the use of ES's, but which nevertheless may arise in that connection under certain circumstances.[1] These topics include the concurrence of actions,[2] arbitration and other forms of alternative dispute resolution (ADR),[3] the issue of conflicts of law arising between international parties,[4] copyright law pertaining to computer programs,[5] and some aspects of constitutional law,[6] particularly the possible influence which the Bill of Rights contained in the Constitution[7] might have on civil liabilities. It must be stressed that an in-depth exposition of these aspects falls outside the ambit of this study and that they are discussed for only two reasons, namely:

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1 For example, such circumstances may arise in case of damage caused by an ES acquired under a licensing agreement concluded by the user with a foreign producer. In a subsequent trial, the court may have to determine whether it has jurisdiction to hear the matter and where the license agreement provides for a **choice-of-law clause**, the principles relating to conflicts of law becomes important: see par 4.1 *infra*.

2 Par 2 *infra*.

3 Par 3 *infra*.

4 Par 4 *infra*.

5 Par 5 *infra*.

6 Par 6 *infra*.

7 The Constitution of the Republic of South Africa Act 108 of 1996.

(a) to present a complete picture to the reader who is seeking general assistance in the determination of civil liability arising from the use of ES's; and

(b) to furnish motivation for the argument that certain ES liability resulting from a defective ES should be resolved in terms of **strict product liability** principles adopted through legislation.[8]

Concurrence of claims is very relevant to the issue of ES liability because of the likely incidence of various actions existing simultaneously when harm is caused through the use of ES's and for this reason, the basic principles of actual concurrence are pointed out. Because of the highly technical nature of ES's, it may be advisable for parties involved in a dispute arising from the use of ES's to turn to other conflict-resolving measures, such as arbitration, when a solution is sought. Consequently, the advantages and disadvantages of ADR mechanisms are pointed out. The discussion of copyright law is included for the purpose of drawing an analogy between the manner in which the legislator determines the holder of copyright in a computer-generated work, and the determination through general principles of who the possible liable parties are in a civil action arising from the use of ES's. Computer contracts often contain "choice of law" clauses designating a foreign legal system as the law in terms of which disputes arising from such contracts have to be resolved. In some instances, a jurisdiction clause in terms whereof the jurisdiction of a particular forum is agreed upon, is also included and therefore the implications of such clauses are highlighted. The necessity of a discussion of the possible effect or influence of the Constitution on civil liabilities arises from the crucial question involving the so-called horizontal application of a bill of rights: to what extent, if any, does the South African Bill of Rights contained in the Constitution apply to private law relationships (horizontal operation), or does it only find application in the public law relationship that

8 The submission is that the producers of software, including the producers of ES's, should be strictly liable for damage to person and private property caused as a result of defects in the software: see ch 7 *infra*.

exists between the individual and the State (vertical operation).[9] If the Bill of Rights has horizontal application, contractual and delictual liability will have to be determined with due regard to the possible infringements of the parties' fundamental rights protected in the Bill.[10] It would appear though, that the vertical-horizontal debate will shortly be of academic interest as the final Constitution specifically provides for application by the judiciary[11] of fundamental rights provisions to "all law", hence also to the rules of private law.[12] However, the exact scope of horizontal application will still have to be determined.[13]

2. Concurrence of claims

2.1 Introduction

It is a well-known principle in law that one and the same act may lead to different civil actions or claims for which different remedies are available.[14] These remedies may

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9 *In Du Plessis and Others v De Klerk and Another* 1996 (5) BCLR 658 (CC) the court held that the bill of rights contained in Chapter 3 of the Interim Constitution of the Republic of South Africa Act 108 of 1996 does not have a general direct horizontal application but it may have an indirect influence on the development of the common law as it governs relationships between individuals. However, it seems as if the final Constitution does make provision for the direct horizontal application of the Bill of Rights: Chapter 2 of Act 108 of 1996: see par 6.2.2 *infra*.

10 In the USA, strict liability in the form of products liability that is applied to information products, is viewed by some critics as constituting a first amendment infringement: see par 6.3 *infra*.

11 S 8(1) of Act 108 of 1996: see par 6.2 *infra*.

12 S 8(3) of Act 108 of 1996.

13 See par 6.2 *infra*.

14 The principle is also referred to as "concurrence of remedies" and" concurrent liability". Boberg 1-2; Neethling *et al* 262 *et seq* ; Van der Walt 7; Van der Merwe and Olivier 464 *et seq*; Hosten 1960 *THRHR* 251. Van Aswegen 3 prefers the wording "claims" (Afr: *eise*) to that of "actions", *inter alia*, because of the latter's procedural meaning which is inconsistent with the substantive content of this subject.

be similar (for example delictual actions only) or dissimilar (for example delictual and contractual actions) and, depending on their purpose, they could all be instituted simultaneously.[15] This is the case where, for example, the different delictual actions concur for different types of loss and therefore the actions do not compete with each other. Van Aswegen[16] refers to this type of concurrence as "concurrence in the wide sense". It is also possible for one act to give rise to a claim which can be based on **alternative** causes of action such as a choice between a contractual and a delictual action. In such a case there is also a concurrence of claims but the law forbids or limits their simultaneous application.[17] Van Aswegen[18] defines this phenomenon as "concurrence in the narrow sense" and points out that this type of concurrence causes problems when a choice between claims must be made. It is also possible for parties to a contract to restrict their contractual and/or delictual liability through an exclusion or limitation clause.[19] The exact nature of the restriction on liability is a question of interpretation which, in turn, will have an effect on the type of remedies at the prejudiced person's disposal.[20] During the

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Concurrence of civil claims actually forms part of the all-embracing general concept of concurrence which, in its widest meaning, denotes the application of numerous legal rules and principles to the same factual situation: Van Aswegen 5. A single act can therefore result in delictual, contractual and criminal liability. As this study is limited to civil liability issues only, concurrence of criminal actions is not discussed.

15 Neethling *et al* 262; Van der Merwe and Olivier 464 *et seq.*

16 At 9.

17 Van Aswegen 9 calls this "sameloop in die eng sin" as opposed to the former types of concurrence which is "sameloop in die wye sin". *Contra* Hosten 1960 *THRHR* 251 who opines that "concurrence" only exists in cases where different remedies can be exercised simultaneously; the problem of concurrence ("die ware 'sameloop'probleem") consists rather of a choice of actions.

18 At 10.

19 *Essa v Divaris* 1947 1 SA 753 (A); *Government of the RSA v Fibre Spinners and Weavers (Pty) Ltd* 1978 2 SA 794 (A).

20 The clause may, eg, only exclude the remedies for breach of contract, leaving the prejudiced party with the delictual action: Neethling *et al* 255; Van Aswegen 349

determination of ES liabilities, concurrence of claims in the wide as well as in the narrow sense is likely to occur, necessitating a brief discussion of the various ways in which concurrence takes place when the use of ES's cause damage.

2.2 Concurrence and the use of expert systems

The question arises as to when the use of an ES would lead to concurrent civil liability. The various situations of concurrence that may arise when ES liability is determined are illustrated in terms of the first type of hypothetical ES identified, namely the Intelligent Assistant,[21] as this type of system has the potential to portray all possible legal relationships that may lead to the concurrence of claims:[22] Say for instance the patient of a doctor who uses a MES to assist her in the prescription of the appropriate medicine, suffers a bodily injury causing patrimonial loss, such as medical expenses, as well as non-patrimonial loss such as pain and suffering, after taking a drug incorrectly prescribed by the doctor because of an error in the knowledge base of the MES. The MES in question was developed by a software house who used the services of one of their own employees as the KE, and that of an independent contractor, namely a medical specialist who is a drug therapy expert, as the DE. The defective MES is one of a batch MES's distributed as packaged standard software to a local computer shop, from where it was bought by the doctor. Under these circumstances, the doctor is a professional user of the MES, the patient is the injured party who is not a user of the MES, and the producers of the MES consist of the software house as the developer under whose name the MES is distributed, and the computer shop as the supplier of the MES.[23] The designers of

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et seq.

21 See ch 2 par 11 *supra*.

22 The relationships that occur in the remaining two types of ES's are included in the relationships created by the Intelligent Assistant, making it unnecessary to discuss the resulting concurrences under a separate heading.

23 See fig 1.

the MES, namely the KE as the software author and the DE who is responsible for the content of the knowledge base, also form part of the producers of the MES.[24]

2.2.1 Claims against the producers

2.2.1.1 Developers

The patient and the doctor may have a delictual claim against the software house based on manufacturer's liability (product liability).[25] The patient's claim will consist of the Aquilian action for patrimonial damage suffered and the action for pain and suffering for non-patimonial damage suffered as a result of the personal injury caused by the defective MES. The doctor, who will only have suffered financial loss in the circumstances, will have the Aquilian action at her disposal. The doctor (a professional user)[26] may also have a claim based on breach of contract against the software house, depending on the type of acquisition contract in existence between the parties.[27] It is very likely that the doctor and the software house would have entered into a licensing agreement[28] which would probably contain an exclusion clause excluding or limiting the liability of the developer for any or some loss sustained as a result of the use of the MES, including damage suffered in terms of a delictual action.[29] In these circumstances the professional liability of the developer may also be at stake which could have an impact on the determination of the validity

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24 See ch 2 par 8.2 *supra*.

25 See ch 3 par 3.3.6 *supra*.

26 See ch 2 par 8.2.6 *supra*.

27 See ch 3 par 2.6.2 *supra*.

28 See ch 3 par 2.5.1.2 *supra*.

29 See ch 3 par 2.4.2.4 *supra*.

of an exclusion clause.[30] The delictual and contractual claims of the doctor would be in strict concurrence for which a solution would have to be determined in terms of the principles referred to later.[31] The doctor will have to choose one of the actions or institute the actions in the alternative. The reason why the plaintiff has to choose a claim or institute them in the alternative, is because the claims, which exist between the same parties and are based on the same act, also have the same purpose (compensation for the patrimonial loss suffered) and would result in the plaintiff being compensated twice for the same loss. It is this incidence of concurrence that is referred to as the "problem of concurrence".[32]

The doctor may also have a delictual action against the DE based on the latter's professional liability as a medical expert, which may consist of a misrepresentation or omission, although such liability for pure economic loss, which is the type of loss suffered by the doctor, is contentious and requires a thorough investigation of the elements of wrongfulness, negligence and causation in this regard.[33] Because the DE (the party responsible for the defect in the knowledge base), is an independent contractor, the doctor will not have an action based on vicarious liability against the software house as would have been the case if the defect was caused by the KE who is in the employ of the software house. The patient also has a delictual action against the DE based on the latter's professional liability, which action is clearly established in the light of the personal injury suffered by her due to the possible misrepresentation or omission committed in the circumstances.[34]

Where different claims for damages for the same loss exist against different

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30 It is generally regarded as unethical for professionals to exclude their liability: see ch 3 par 2.7 and 3.3.3.3 *supra*.

31 Par 2.3 *infra*.

32 Par 2.3 *infra*.

33 Neethling 1996 *THRHR* 197 et seq: see ch 6 par 6.2 *infra*.

34 See ch 6 par 6.2 *infra*.

defendants, concurrence does not occur because a recovery of compensation from one defendant immediately extinguishes the other claims since the plaintiff no longer suffers a loss, an indispensable requirement for the claim.[35] Where different plaintiffs have a claim against the same defendant for the same loss, the principle of *ne bis in idem* will prevent compensation from being recovered twice.[36]

2.2.1.2 Supplier

The doctor has a claim for breach of contract for patrimonial loss suffered[37] against the supplier of the MES, based on the acquisition contract in existence between them.[38] As there is no contract in existence between the patient and the supplier of the MES, a contractual action cannot be instituted by the patient. The supplier does not have a delictual duty with regard to products supplied, and therefore no delictual actions can be instituted.

2.2.2 Claims against the users

The patient would have a claim against the doctor for damages for patrimonial loss[39] suffered because of a breach of contract based on the mandate that exists between

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35 Van Aswegen 1994 *THRHR* 153. If the claims were instituted against the defendants jointly and severally, compensation for the loss will only be awarded once.

36 Van Aswegen 476-477; Van Aswegen 1994 *THRHR* 152.

37 As it is unlikely that the doctor will suffer non-patrimonial loss when the patient suffers a bodily injury due to an incorrect ES used by the doctor, the possibility of a concurrent action for pain and suffering by the doctor against the producer or supplier, is ignored.

38 See ch 3 par 2.6.2 *supra*.

39 Only patrimonial loss can be recovered in contract: *Administrator, Natal v Eduard* 1990 (3) SA 581 (A). The court held in the latter case that there is not sufficient reason of policy or convenience to extend liability for breach of contract so that non-patrimonial loss might be claimed for *ex contractu*.

doctor and patient,[40] as well as a claim for negligent malpractice based on the doctor's delictual duty towards the patient.[41] The delictual action may consist of the Aquilian action for patrimonial damage and the action for pain and suffering as a result of the infringement of the patient's physical-mental integrity.[42] Both these claims are based on the professional liability of the doctor.[43] Of these claims, the patient's two delictual actions, namely the *actio legis Aquiliae* and the action for pain and suffering will concur and the patient will be able to institute both actions simultaneously in order to claim damages for the patrimonial loss suffered under the Aquilian action and compensation under the action for pain and suffering.[44] The patient's contractual action against the doctor concurs with the two delictual actions mentioned if, as in these circumstances, the conduct wrongfully and culpably infringes upon a legally recognised interest that exists independently of the breach of contract.[45] The claims for patrimonial damage caused must, however, be instituted in the alternative or one of the actions must be elected to proceed with.[46] However, the delictual action for pain and suffering may be instituted in addition to the contractual action as it serves a completely different purpose, namely that of

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40 Ch 3 pars 2.2.2 and 2.7 *supra*. See also Strauss 243; Claassen and Verschoor 117.

41 Ch 3 pars 3.3.3.3 and 3.3.6 *supra*. See also Strauss 244; Claassen and Verschoor 118.

42 Although the Aquilian action and the action for pain and suffering may also be instituted for patrimonial damage intentionally caused and injury to personality caused through the wrongful and **intentional** impairment of bodily or physical-mental integrity, such a possibility is not discussed as this study is only concerned with negligent actions: see ch 1 par 1.4.2 *supra*. For the same reason a claim based on the *actio iniuriarum*, which requires intention, is excluded from discussion.

43 See ch 3 pars 2.7 and 3.3.3.3 *supra*.

44 Neethling *et al* 250-251.

45 See par 2.3 *infra*.

46 See par 2.4 *infra*. See also Neethling *et al* 253; Van der Merwe and Olivier 478 *et seq* 24.

compensation of non-patrimonial loss suffered.[47] The Appellate Division has held that compensation for pain and suffering experienced as a result of breach of contract cannot be claimed with the contractual action, such loss must be claimed for by way of a delictual action.[48]

2.3 The problem of concurrence

The problem of concurrence as a legal phenomenon actually only refers to that incidence of concurrent remedies or claims for the same act with the same purpose between the same parties, in other words, concurrence in the strict or narrow sense, or "true concurrence".[49] Concurrence in its strict sense gives rise to a two phase-test, implying two distinct enquiries.[50] Firstly, it has to be determined whether different claims do in fact exist on the facts of each special set of circumstances. This means that the requirements for each different claim must be met, for example in the case of concurrence of contractual and delictual liability, the conduct complained of must comply with the independent requirements for delictual liability in addition to constituting a breach of contract.[51] Secondly, after it has been established that concurrence of claims exist, the relationship between the concurrent claims need to be examined in order to decide whether the plaintiff may institute all concurrent claims, freely choose between the claims or be restricted to one of the

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47 Neethling *et al* 252; Van der Merwe and Olivier 476. With regard to the content and seperate existence of the action for pain and suffering distinct from the *actio legis Aquiliae*, see *Union Government (Minister of Railways and Harbours) v Warneke* 1911 AD 657 665; *Evins v Shield Insurance Co Ltd* 1980 2 SA 814 (A) 838; *Guardian National Insurance Co v Van Gool* 1992 4 SA 61 (A) 65.

48 *Administrator, Natal v Eduard supra* 596.

49 Hosten 1960 *THRHR* 251.

50 Van Aswegen 96-103; Midgley 1990 *SALJ* 626-629; Farlam and Hathaway 10-12.

51 This is called the "independent-delict" test: *Lillicrap, Wassenaar and Partners v Pilkington Brothers (SA) (Pty) Ltd* 1985 1 SA 475 (A). See also Van Aswegen 1994 *THRHR* 150.

claims. In other words, an appropriate solution must be found for the concurrence. As stated before, in the event of concurrence in the wide sense where the different claims do not compete with each other, there is no restriction on a plaintiff to institute all claims.[52] The existence of different claims arising from the same facts against or at the instance of different parties does not amount to concurrence.[53] However, in the case of narrow or strict concurrence, this second enquiry becomes crucial as it determines which of the competing claims should be recognised. The choice of a solution is a policy issue to be decided by policy considerations.[54]

The most common example of true concurrence is found in the simultaneous application of claims for damages for patrimonial loss for breach of contract and *ex lege Aquilia* such as found in the circumstances of the ES liabilities identified above.[55] The possibility of concurrent contractual and delictual claims arising from the same conduct has been considered in our case law.[56] The courts have held that the existence of concurrent contractual liability does not prevent an action in delict, provided that the independent requirements of delictual liability are also met.[57] This will be the case where, even in the absence of a valid contract, the circumstances amounting to a breach of contract indicate delictually wrongful conduct, for example an infringement of a recognised subjective right (such as the right to person and

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52 Van Aswegen 1994 *THRHR* 150.

53 Van Aswegen 11; Midgley 1993 *THRHR* 308; Van Aswegen 1994 *THRHR* 150.

54 Van Aswegen 98 381; Midgley 1990 *SALJ* 626-629; Boberg 1; Neethling *et al* 7; Van der Merwe and Olivier 468; Van der Walt 7; Farlam and Hathaway 10-13.

55 The contractual and delictual claims for patrimonal loss suffered in strict concurrence by for example, the claims of the doctor referred to in pars 2.2.2.1 and 2.2.2.2 *supra*.

56 *Van Wyk v Lewis* 1924 AD 438; *Lillicrap, Wassenaar and Partners v Pilkington Brothers (SA) (Pty) Ltd supra*; *Correira v Berwind* 1986 4 SA 60 (ZH); *Otto v Santam Versekeringsmaatskappy Bpk* 1992 3 SA 615 (O); *Tsimatakopoulos v Hemingway, Isaacs & Coetzee CC* 1993 4 SA 428 (C).

57 *Lillicrap, Wassenaar & Partners v Pilkington Brothers (SA) (Pty) Ltd supra* 496 499.

property) or the existence of a legal duty to prevent harm outside duties created solely by contract. Van Aswegen[58] proposes a test in this regard whereby the legal validity of the contract, but not the existing factual situation or the relationship between the parties is eliminated during the determination of delictual unlawfulness. Neethling *et al*[59] gives the example of a surgeon who performs an operation negligently thereby causing patrimonial damage. In such a case, apart from the breach of contract, the patient's personality interest in physical-mental integrity is also infringed with the result that the patient has an Aquilian action as well as a contractual action with which to claim damages.

The injured party will usually then have a choice between suing in contract or in delict. In cases of patrimonial loss for damage for physical injury to person or property, a plaintiff will have no difficulty to institute either of the actions referred to above,[60] but in instances involving pure economic loss,[61] which is the kind of damage that is frequently likely to be sustained during the use of ES's in business,[62]

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58 At 300 *et seq.*

59 At 253-254.

60 Namely a delictual or a contractual action, where appropriate.

61 "Pure economic loss" , also called "financial loss", refers to patrimonial loss not resulting from damage to the property or person of the plaintiff: Neethling *et al* 280; Boberg 104. See also ch 3 par 3.3.5 *supra* and ch 6 par 3 *infra*. Examples of such loss in case law are found in *Combrinck Chiropraktiese Kliniek (Edms) Bpk v Datsun Motor Vehicle Distributors (Pty) Ltd* 1972 4 SA 185 (T); *Greenfield Engineering Works (Pty) Ltd v NKR Construction (Pty) Ltd* 1978 4 SA 901 (N); *Arthur E Abrahams and Gross v Cohen* 1991 2 SA 301 (C); *Shell and BP SA Petroleum Refineries (Pty) Ltd v Osborne Panarama SA* 1980 3 SA 653 (D); *Franschhoekse Wynkelders (Ko-op) Bpk v SAR & H* 1981 3 SA 36 (C); *Kadir v Minister of Law and Order* 1992 3 SA 737 (C).

62 Eg a tax advisory system or a financial investment system which may be either in the form of an Intelligent Assisstent or a Self-Help System as defined in ch 1 par 1.1 *supra*.

the courts are less clear in their treatment of the scope of Aquilian liability.[63] The reason for this is the fact that the wrongfulness-requirement in the case of an act causing pure economic loss, lies in the breach of a legal duty rather than in the infringement of a subjective right.[64] The reasonableness criterion[65] according to which a legal duty not to cause economic loss is determined, entails the exercising of a value judgement of all the relevant facts in terms of considerations of policy.[66] One of these relevant factors is the fear that compensation of pure economic loss would lead to an "overwhelming potential liability" [67] of a socially calamitous nature.[68] Although delictual liability for pure economic loss is now firmly recognised in our law,[69] it seems that the courts will not readily construe an interest that exists independently from a contract in cases of concurrence.[70]

2.4 Solutions to the problem of concurrence

There are three acknowledged solutions to the problem of concurrence, namely alternativity, exclusivity and cumulation. The solution put forward by the theory of

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63 Neethling *et al* 253-255; Van der Walt 35-36; Boberg 103-149. See also Van Warmelo 1985 *TSAR* 227; Hutchinson and Visser 1985 *SALJ* 587; Wunsch 1988 (1) *TSAR* 1; Midgley 1990 *SALJ* 621.

64 See ch 3 par 3.3.2.1 *supra.*

65 The *boni mores*: see ch 3 par 3.3.2.1 *infra.*

66 See ch 6 par 3.2 *infra.*

67 *Greenfield Engineering Works (Pty) Ltd v NKR Construction (Pty) Ltd* 1978 4 SA 901 (N) 916-917.

68 See ch 6 par 3.2 *infra.*

69 Neethling *et al* 11-12; Boberg 103. See also *Coronation Brick (Pty) Ltd v Strachan Construction Co (Pty) Ltd* 1982 4 SA 371 (D); *Administrateur, Natal v Trust Bank van Afrika* 1979 3 SA 824 (A).

70 *Lillicrap, Wassenaar and Partners v Pilkington Brothers (SA) (Pty) Ltd supra* 499; see par 2.4 *infra.*

alternativity is regarded as the appropriate solution in our law.[71] The theory of alternativity means that the injured party may choose freely between the concurring claims *ex contractu* or *ex lege Aquilia* and may institute them in the alternative.[72] The only proviso to the existence of the *actio legis Aquiliae* together with the contractual action, is that the conduct must not only constitute a breach of contract but also wrongfully and culpably infringe a legally recognised interest. In other words, the conduct complained of must constitute a delict that exists independently of a contract.

The following factors influence the choice between an action *ex contractu* and *ex lege Aquilia* by an injured party:[73]

(a) The calculation of damages differs between the two actions with regard to the **extent** [74] of the damages as well as the **time**[75] of their estimation.

(b) The requirements of legal capacity to incur delictual liability differ from

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71 Van der Merwe and Olivier 468; Neethling *et al* 265. Van Aswegen 484 accepts this solution, provided that successive alternativity for the sake of full compensation is allowed and that the agreed terms of contract take precedence, because it guarantees the freedom of parties to contract. She is also of the opinion that the possibility of concurrence should be acknowledged in cases of breach of contract causing pure economic loss.

72 Neethling *et al* 253; Van der Walt 7.

73 Van Aswegen 452-453; Neethling *et al* 253-255.

74 In the law of delict liability is limited through the regulation of legal causation, adopting a flexible approach based on policy: *S v Mokgethi* 1990 1 SA 32 (A); *International Shipping Co (Pty) Ltd v Bentley* 1990 1 SA 680 (A). See ch 3 par 3.3.4.3 *supra*. Contractual liability may be limited through the application of the criterion of actual foresight or **reasonable foreseeability** or possibly the convention principle: Van Aswegen 328-330; Neethling *et al* 254.

75 In the law of delict damages are recoverable as determined at the date of the commission of the delict, whereas the law of contract measures damages at the time of the conclusion of the contract: Van Aswegen 30-332; Neethling *et al* 254.

those in regard to contractual liability.[76]

(c) The liability of joint wrongdoers is different to that of joint parties to a contract.[77]

(d) The ambit of vicarious liability in delicts is much wider than in cases of breach of contract.[78]

(e) An injured party can relieve a wrongdoer of delictual liability by unilaterally waiving her rights for example by consent, but the unilateral waiving of a contractual claim cannot relieve a contracting party of her liability since a personal right can only be extinguished by agreement.[79]

(f) Exclusionary or limiting clauses in a contract may only apply to contractual liability, leaving the wrongdoer still delictually liable.[80]

(g) Contributory negligence is only a defence against a delictual claim, with the result that it may be advantageous for a contributorily negligent plaintiff to

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76 For example, a minor cannot be sued for breach of contract but can be sued as a delictual wrongdoer: Neethling *et al* 254.

77 Joint wrongdoers are jointly and severally liable for the full damage caused whereas a joint contracting party is normally only liable for a *pro rata* share of the performance: Van Aswegen 338-341; Neethling *et al* 257-258. See also ch 3 pars 2.2.2.3 and 3.5.2 *supra*.

78 Employers are vicariously liable for the delicts of their employers committed within the scope of their employment whereas they can only be liable for their employees' breach of contract if the latter acted as agents or mandataries within the execution of their employers' contractual obligations: Van Aswegen 341-343; Neethling *et al* 254. See ch 3 pars 2.2.1 and 3.5.2 *supra*.

79 Van Aswegen 343-348; Neethling *et al* 255.

80 Unless the exclusion clause pertains specifically to delictual actions: Neethling et al 254; Van Aswegen 358. See also ch 3 pars 2.4.2 and 3.3.3.4 *supra*.

institute a contractual action.[81]

(h) The onus of proof in a delictual action is on the plaintiff to prove the negligence of the defendant, whereas in a contractual claim for breach of contract the onus is on the defendant to prove that she was not negligent.[82]

(i) The jurisdiction of courts may differ according to whether the action is based on delict or on contract.[83]

(j) The rules of private international law prescribe the application of the *lex loci contractu*[84] to an action *ex contractu* and the *lex loci delicti commissi*[85] to an action *ex delicto*, which locations may of course differ.

2.5 Concurrence in cases involving pure economic loss

It appears from the *Lillicrap*-decision[86] that, in cases of pure economic loss, the courts, unlike cases where a breach of contract also leads to damage to property or an injury to personality, will not readily hold that an interest exists independently of

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81 The Apportionment of Damages Act 34 of 1956 applies only to delictual claims and not to contractual actions: *Barclays Bank DCO v Straw* 1965 2 SA 93 (O). See also ch 3 par 3.3.3.6 *supra*.

82 Van Aswegen 372-373; Neethling *et al* 255. See also ch 3 pars 2.2.2.1 and 3.3.3.5 *supra*.

83 Van Aswegen 373-378.

84 The law of the place where the contract was entered into: see par 4.4.1 *infra*.

85 The law of the place where the delict was committed: see par 4.4.2 *infra*.

86 *Supra*.

a contract.[87] This means that in the case of, for instance, negligent provision of professional services in terms of an agreement (with attorneys, auditors, engineers, etcetera), injured parties would probably only have the contractual action at their disposal where there is no infringement of the respondent's property or personality rights.[88] Thus it seems that our **positive law** accepts a solution of **exclusivity** in cases of pure economic loss.[89] The decision was criticised by several commentators,[90] mainly because of the court's inability to distinguish clearly between the two stages of the enquiry into finding a proper solution for concurrence.[91] The majority judgement wrongly used the policy decision whereby a solution is determined (the second phase of the test) to determine whether the element of wrongfulness is present (the first phase of the test).[92] The effect is that conduct generally recognised as leading to delictual liability in the absence of a contract between the parties, was not regarded as delictually wrongful in a situation

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87 Hutchison and Visser 1985 *SALJ* 587; Midgley 1990 *SALJ* 621. See also ch 6 par 3 *infra*.

88 *Ibid*. See also Van Aswegen 1994 *THRHR* 147 - 153 where she points out that the *Lillicrap* decision *supra*, does not bar the co-existence of contractual and delictual liability in all cases where the parties are in a direct contractual relationship, but rather that the breach of contractual duties to perform professional work does not *per se* constitute a delict and thus ground Aquilian liability in addition to liability for breach of contract. This does not exclude the possibility of of such co-existence where the requirements for an independent delict are fulfilled: *Tsimatakopoulos v Hemingway, Isaacs & Coetzee CC supra*.

89 Midgley 29 suggests that our law should follow the **alternative** system in **all** cases, irrespective of the type of relationship between the parties or the kind of loss sustained. He criticises the *Lillicrap*-decision for finding against concurrent liability in cases of pure economic loss where a professional contractual relationship exists as he feels the question should simply be: is there a delict or is there not? According to him the criteria for limiting delictual liability, for example the policy factors considered in the wrongfulness element, are restrictive enough without having to tamper with fundamental principles.

90 Midgley 1994 *THRHR* 629; Hutchison and Visser 1985 *SALJ* 587; Boberg 15-16; Van Aswegen 1993 *THRHR* 192-193; Van Aswegen 294-297.

91 Par 2.3 *supra*.

92 Midgley (2) 29; Van Aswegen 294.

of concurrence.[93]

The facts of the Appellate Division decision in *Lillicrap, Wassenaar and Partners v Pilkington Brothers (SA) (Pty) (Ltd)*[94] were as follows:

Pilkington Brothers, a glass-manufacturing company, contracted with Lillicrap, Wassenaar and Partners, a firm of consulting engineers, to conduct soil investigations whereby the suitability of a site for the erection of a glass plant was to be determined. After the plant had been constructed on the recommendations of the engineers, it transpired that the site was, after all, unsuitable for its purpose, and Pilkington Brothers instituted a claim for damages against Lillicrap, Wassenaar and Partners.[95] The claim, arising from the allegation that the engineers did not perform their duties with the required professional skill and care, was based in delict as the contractual action had already prescribed. Lillicrap, Wassenaar and Partners excepted to the action on the ground that no cause of action arose in delict, which exception was dismissed in part by the court *a quo*.[96] On appeal, the question whether all breaches of contract are species of delict was not specifically decided,[97] but the court held that the same facts could, in principle, give rise to causes of action in delict as well as in contract,[98] provided that the elements of a delict are present and the claim in delict is founded independently from the contract.[99] The court

93 Van Aswegen 1994 *THRHR* 152.

94 1985 1 SA 475 (A).

95 See also Hutchinson and Visser 1985 *SALJ* 587-59; Midgley 1990 *SALJ* 621-632 for a discussion of this decision.

96 *Pilkington Brothers (SA) (Pty) Ltd v Lillicrap, Wassenaar and Partners* 1983 2 SA 157 (W).

97 495I-496C.

98 496H-I.

99 500H-I

distinguished[100] the present case from *Van Wyk v Lewis*,[101] in that the facts of the latter involved an infringement of rights of property or person which are *prima facie* wrongful,[102] whereas it is common cause that the facts of the present case involve a claim for pecuniary loss based on the principles of the extended Aquilian action.[103] In such cases, where there is an absence of clearly wrongful actions, the element of wrongfulness has to be decided by the court through applying the test of reasonableness which involves policy considerations.[104] The majority of the court found that **policy considerations** did not require conferring the *actio legis Aquiliae* for the negligent performance of professional services, which was rendered in terms of a contract, in circumstances where there was no need to do so:[105]

> In considering whether an extension of Aquilian liability is justified in the present case, the first question that arises is whether there is a need therefor. In my view, the answer must be in the negative, at any rate in so far as liability is said to have arisen while there was a contractual nexus between the parties. While the contract persisted, each party had adequate and satisfactory remedies if the other were to have committed a breach. Indeed the very relief claimed by the respondent could have been granted in an action based on breach of contract.

The Appeal Court approached the extension of Aquilian liability in a more

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100 496F-I: The majority of the court, *per* Grosskopf AJA, rejected the trial court's finding that the present case involved damage to property.

101 1924 AD 438.

102 In the *Van Wyk* case a swab was post-operatively sewn up in a patient, causing personal injury.

103 In this respect the court referred to its own decision in *Administrateur Natal v Trust Bank van Afrika Bpk* 1979 3 SA 824 (A), where it was held that Aquilian liability could in principle arise from negligent misstatements causing pure financial loss.

104 499.

105 *Ibid.*

conservative manner than the court *a quo*[106], finding that the negligent breach of a contract for the rendering of professional services which results only in economic loss (as opposed to physical harm), is not a delict, that causing pure economic loss is not *prima facie* wrongful and that there must be valid policy reasons before Aquilian liability will be extended to cover this type of circumstance.[107] As policy considerations do not require that delictual liability be imposed for the negligent breach of a contract of professional employment, the appeal succeeded and the exception was upheld. Smuts AJA dissented, holding the view that the engineers were liable in delict for the negligent performance of a duty contractually undertaken by it in its professional capacity or for negligent misstatements made in the course of performing its contractual obligation.[108]

2.6 Conclusion

The implication for ES's is that, in the case of a possible concurrence of actions "in the narrow sense" as defined above,[109] an enquiry will first be made into the type of damage that has been sustained as a result of the use of the particular ES. If it is in the form of physical injury to a person or property, there will be concurrence, and the claimant will have a choice between an action based on contract or on delict, or even to institute both claims cumulatively as long as only the actual damages

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106 The court *a quo* adopted the more liberal approach of English law as put forward by Lord Wilberforce in *Anns v Merton London Borough Council* [1978] AC 728, where an extension of a duty to take care takes place whenever there is such a sufficient relationship of proximity between the parties that it can be said that the wrongdoer should reasonably have foreseen that carelessness on her part may be likely to cause damage. The Appeal court is in any case of the opinion that policy reasons which may be valid in one legal system, are not necessarily valid in another system: 525C-D. See ch 5 part I *infra*.

107 Boberg 16. See also Wunsh 1988 *TSAR* 2-3; Van Aswegen 1993 *THRHR* 187.

108 5061. The decision attracted much criticism: See Midgley 1990 *SALJ* 623 and the commentators cited in fn 26; Hutchinson and Visser 1985 *SALJ* 587; Boberg 15.

109 In other words, where there is a claim for damages based on a breach of contract as well as a claim for damages *ex lege Aquilia*, see par 2.1 *supra*.

sustained are recovered.[110] The choice of an action will depend on the factual circumstances and the factors referred to above.[111]

However, if the damage consists of pure economic loss, the courts will be reluctant to find that a legally recognised interest exists apart from the contract and therefore that a delict has been committed, leaving the claimant with a contractual action only.[112] In terms of the *Lillicrap* -decision[113] the indications are that a party sustaining pure economic loss through the use of an ES, where such party has a contractual as well as a delictual action arising from the use of the ES, will only have a contractual action at her disposal.[114] This will be the position in cases where economic loss is caused to the plaintiff through the use of the Intelligent Assistent and the ES Machine,[115] by a professional user in the execution of professional services rendered to the plaintiff.[116] In the case of the Self-Help System,[117] concurrence of claims based on the lack of professional skill and care in a situation of services rendered, will normally not occur as there is no intervening user with whom such a contract has been concluded. An acquisition contract will exist in the case of all three types of ES's and where concurrence with delictual actions occurs, the plaintiffs will have to elect their actions in terms of the principles set out above.[118]

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110 Par 2.3 *supra*.

111 Par 2.4 *supra*.

112 Par 2.5 *supra*.

113 *Supra* 499-500.

114 Par 2.5 *supra*. See also Neethling *et al* 253; Wunsh 1988 *TSAR* 1.

115 See ch 1 par 1.1 *supra*.

116 Par 2.2.1 *supra*.

117 Ch 1 par 1.1 *supra*.

118 Par 2.4 *supra*.

3. Arbitration and other forms of alternative dispute resolution

3.1 Introduction

Many computer contracts contain an arbitration clause.[119] This is a way for contracting parties to remove decisions based on matters involving high technology from the ordinary courts to a more knowledgeable forum of their own choice. Tapper[120] points out that some of the most important disputes affecting the computing industry are decided by arbitration. Arbitration is the referral of a dispute between parties for final determination in a quasi-judicial manner by a person other than a court of competent jurisdiction.[121] Although arbitration is one of the oldest methods of settling disputes,[122] it also forms part of the mechanisms of the current trend towards "alternative dispute resolution" (ADR) that is gaining impetus locally and abroad.[123]

3.2 Alternative dispute resolution

ADR consists of a variety of methods being developed to resolve disputes outside the framework of formal court adjudication because of a growing dissatisfaction with the litigation process.[124] This development has been brought about by the world-wide

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119 Van der Merwe 70-71; Tapper 224-226.

120 226. See also Eiselen 1995 *SA Merc LJ* 13.

121 Smith *Arbitration* 269; see also par 3.3.2 *infra*.

122 Reference to arbitration is found in the Bible as well as in Roman law from the Twelve Tables to the Code of Justinian: Butler and Finsen 4 and also the authorities cited in fn 27.

123 Butler and Finsen 8. On ADR in general, see De Vos 1992 *TSAR* 381 and 1993 *TSAR* 155; Van Kerken 1993 *ILJ* 17. For a comprehensive exposition of the theory and principles of ADR, see the unpublished doctoral thesis of Faris JA *An analysis of the theory and principles of alternative dispute resolution* UNISA 1995.

124 De Vos 1993 *TSAR* 155;

ideal of providing effective **access to justice** for all people.[125]

3.2.1 The access-to-justice movement

The access-to-justice movement embodies "a radical transformation in legal scholarship and legal reform in a growing number of countries".[126] In this approach the principal elements are the people, the institutions and the processes, representing the elements from which the law evolves.

"Access to justice" is defined as a concept that comprises two basic objectives of a legal system, namely (1) that the system must be accessible to all, and (2) that it must lead to results that are individually and socially just.[127] The 20th century culture of human rights has given an added impetus to the idea of effective access to justice since the possession of rights is meaningless without mechanisms for their effective enforcement. In this sense effective access to justice is the most basic human right of all.[128]

Cappelletti[129] considers the access-to-justice movement to be the central element of a political philosophy based on effective equality, in the sense of equal opportunities. This movement is connected with two other major trends of our time, namely the **constitutional** trend and the **transnational** trend. The constitutional trend is seen in the positivisation of natural law as embodied in the bills of rights of modern constitutions which, in addition to the traditional political and civil rights,

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125 *Ibid.* See Cappelletti 1992 *SALJ* 22-39 for an international perspective on "access to justice".

126 The access-to-justice movement can be seen as the social dimension of law and justice in the modern world: Cappelletti 1992 *SALJ* 22.

127 De Vos 1993 *TSAR* 155.

128 De Vos 1993 *TSAR* 157.

129 1992 *SALJ* 27.

include the social rights, that is human rights of the second generation of which access-to-justice forms the core.[130] The transnational trend is brought about by the inevitable phenomenon of transfrontier migration of people, the proliferation of multinational organisations, mass media and international crime.[131] This phenomenon can be seen in the common markets of the European Union (EU), the General Agreement on Tariffs and Trade (GATT), various human rights treaties,[132] the Berne Convention, etcetera, culminating in a new *ius commune gentium* with a transnational dimension of law and justice. A vital part of this growing body of community law includes **consumer protection** as can be seen firstly, in the EU Directive on liability for defective products[133] which has pre-eminence over the national law of member states,[134] and, secondly, in the various national consumer protection laws of different countries.[135] Consumer protection forms part of a general policy of access-to-justice in that it simplifies the law and strives for more accessible, less expensive methods to solve disputes, and provides for compensation on a no-fault basis where loss is suffered, in other words through making more use of strict liability principles. The ultimate objective of an access-to-justice policy is the approximation of law to society which, according to Cappelletti, is a fundamental criterion of democracy.[136]

The access-to-justice philosophy favours a consumers' perspective, referring to the consumers of law and justice in general, that is **civil society**, over that of the law

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130 Cappelletti 1993 *SALJ* 36.

131 In other words, the "global village" occurence: Cappelletti 1992 *SALJ* 37.

132 Examples are the European and American Conventions on Human Rights.

133 Directive 85/374: see ch 5 part II *infra*.

134 See ch 5 part II par *infra*.

135 Examples are the Consumer Protection Act in the UK, the *Produkthaftungsgesetz* in Germany, s 402a of the Restatement (Second) of Torts in the USA.

136 Cappelletti 1992 *SALJ* 39.

producers and their products, which are the law-makers and their laws, judgements, etcetera. This philosophy reflects the "social rule-of-law state" philosophy which is a response to both oppressive capitalism and Gulag socialism.[137] Cappelletti[138] explains it as follows:

In the first system - oppressive capitalism - a largely uncontrolled power (economic power, but also, indirectly at least, political and legal) is concentrated in the hands of powerful private producers, monopolistic or oligopolistic; in the second - Gulag socialism - the concentration of both political and economic as well as legal power in the governmental organs is even greater, indeed it is institutionalised. In both types of degeneration the consumer is isolated and powerless: the supply side is glorified, whereas the demand side is humiliated and neglected.

The international trend to strive for effective access to justice has also spread to South Africa, evidence of which is found in work of commissions of enquiry and ensuing statutes such as the Hoexter Commission of Enquiry into the Structure and Functioning of the Courts.[139] Their recommendations led to the introduction of the small claims court,[140] which ensures easier and less costly access to judicial resolution. Since 1993, South Africa has joined the world-wide constitutional trend through enacting a Constitution with a Bill of Rights[141] and has rejoined the international community in participation on the world common markets.

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137 Cappelletti 1992 *SALJ* 38.

138 *Ibid.*

139 RP78/1983.

140 This Commisssion had a leading influence on the administration of justice in general and civil procedural law in particular: De Vos 1993 *TSAR* 158.

141 Chapter 2 of Act 108 of 1996.

3.2.2 ADR mechanisms

It is clear that in the context explained above ADR mechanisms such as arbitration, are not only advantageous but should actively be pursued as a method aimed at providing more accessible justice. Ways in which the access-to-justice approach can be facilititated include the following:

(a) Reforming general litigation procedures.

(b) Using alternative methods to decide legal claims.

(c) Establishing special institutions for certain types of claims of social importance for example small claims tribunals and special tribunals for consumer complaints.

(d) Using new methods of providing legal services, for example the services of paralegals.

(e) Simplifying the law, for example through introducing a "no-fault" divorce and a "no-fault" accident compensation system.[142]

In South Africa, "access to justice" is also a central notion in the vision of the role and function of a justice system appropriate to the new democratic constitutional order.[143] Access to justice includes access to the courts and access to lawyers,

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142 In the same manner the streamlining of software product liability in the form of strict liability could be pursued by adhering to the principle of "no-fault" liability of the producer of defective software, in particular an ES, either via the application of the *res ipsa loquitur* doctrine or via legislation: see ch 6 par 5 *infra*. See also ch 5 part II with regard to EU legislation on liability for defective products.

143 S 9 of the Constitution of the Republic of South Africa Act 108 of 1996 proclaims everyone to be equal before the law, entitled to equal protection and benefit of the law.

and also implies the creation and/or existence of mechanisms and procedures to regulate the relationships in society at the same time allowing maximum freedom to individuals so as to reduce disputes and competing claims to a minimum.[144] In the event of software liability disputes, the mechanisms and procedures of ADR methods may lead to a less strict application of the normal rules of evidence and an agreement to a more open approach in this regard.[145]

3.3 Arbitration

The law of arbitration is found in the Arbitration Act[146] as well as in the common law which was not repealed by the Act.[147] Arbitration agreements have to be in writing to fall under the Act,[148] whether they are consensual or compulsory in terms of certain statutes.[149] Oral submissions to arbitration or submissions which are invalid according to the Act but comply with common law principles, are governed by the common law of arbitration.[150]

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144 The movement consists of *inter alia*, streamlining litigation processes to save time and money eg the "small claims court" ito Act 61 of 1984, and introducing alternative mechanisms to settle claims eg arbitration, mediation, mini-trials and short process courts ito Act 103 of 1991: De Vos 1992 *TSAR* 381 and 1993 *TSAR* 155; Butler and Finsen 8-24.

145 Eiselen 1995 *SA Merc LJ* 13.

146 Act 42 of 1965.

147 S 42 of the Act only repeals provincial legislation on arbitration, not the common law: *Nkuke v Kindi* 1912 CPD 529 531.

148 S1 of Act 42 of 1965.

149 The *Labour Relations Act* 66 of 1995 provides for the establishment of a Commission for Conciliation, Mediation and Arbitration whereby the Commission is obliged to attempt to resolve any dispute referred to it in terms of this Act, through conciliation: Ch VII s 112 of the Act.

150 See Butler and Finsen 4-7; Smith *Arbitration* 267.

3.3.1 The arbitration agreement

Under common law no written agreement is required, but for a valid submission in terms of the Act, an arbitration agreement is defined as "a written agreement providing for the reference to arbitration of any existing dispute or any future dispute relating to a matter specified in the agreement whether an arbitrator is named or not".[151] It is a self-contained contract, collateral or ancillary to the main agreement in which it may be contained, and remains *in esse* even when the main agreement is terminated,[152] unless the reason for its termination lies in some matter outside the terms of the contract itself.[153] In this event reliance cannot be placed upon an arbitration clause as its validity is derived from that of the contract in which it is incorporated; if the contract is invalid the arbitrator has no jurisdiction to proceed.[154] Any dispute which relates to the terms of the contract itself, such as the nonperformance of an obligation, is arbitrable.[155] The acquirement or use of a defective ES under a contract containing an arbitration clause would, therefore, set the arbitration clause in motion. By the same token, a dispute concerning the operation of an exclusion clause would have to be referred to arbitration.

All matrimonial matters, matters *re* status, criminal matters and matters that are illegal, immoral and *contra bonos mores* are excluded from arbitration in terms of both the Act and common law.[156] Any party with contractual capacity may enter

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151 S 1.

152 *SA Transport Services v Wilson* 1990 3 SA 333 (W) 340 341.

153 *Scriven Bros v Rhodesia Hides and Produce Co Ltd* 1943 AD 393 401; *Gardens Hotel (Pty) Ltd v Somadel Investments(Pty) Ltd* 1981 3 SA 911 (W).

154 This applies even when the parties to the contract declare the clause excisable or elect to say that the clause itself is severable from the contract: *Wayland v Everite Group Ltd* 1993 3 SA 946 (W).

155 *Van Heerden v Sentrale Kunsmis Korporasie Bpk* 1973 1 SA 17 (A) 27.

156 S 2. See also Smith *Arbitration* 270; Butler and Finsen 55.

into a binding arbitration agreement.[157] Companies may also agree to arbitration proceedings between themselves and any other person or company.[158] Arbitration clauses are frequently incorporated in building contracts, deeds of lease, deeds of partnership, insurance policies, deeds of sale and software licensing agreements.[159] The clauses may pertain only to certain disputes or to all disputes concerning the contract.[160] The choice of a particular arbitrator will be respected in most legal systems, irrespective of the locality of the arbitrator.[161]

A party may not cancel or terminate the agreement to refer to arbitration without **good cause** or the consent of all the parties, both in terms of common law[162] and the Arbitration Act.[163] However, if good cause is shown, the courts may set aside the arbitration agreement or order that a dispute not be referred to arbitration, or that it ceases to have any effect.[164] This onus is not easily discharged and there should be compelling reasons for the court to set the arbitration agreement aside as the party trying to avoid arbitration is seeking to escape her contractual obligations, thereby depriving the other party of the advantages of arbitration.[165] Factors taken into account by the courts in exercising their discretion with regard to good cause shown include circumstances where all the parties to the dispute are not parties to the arbitration agreement with the result that arbitration may result in a multiplicity of

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157 *Stein v Otto* 1917 WLD 2; *Meny-Gibert v Crawley* 1938 CPD 491; *Turkstra v Massyn* 1958 1 SA 623 (T).

158 S 72(1) of the Companies Act 61 of 1973.

159 Smith *Arbitration* 274.

160 *Ibid.*

161 Eiselen 1995 *SA Merc LJ* 14.

162 *Melvin v Building Committee of St Cyprian's Society* (1989) 9 EDC 1.

163 S 3(1) of Act 42 of 1965.

164 S 3(2)(a).

165 S 3(2)(b). See also Butler and Finsen 64-67.

proceedings leading to conflicting decisions and increased costs,[166] and where the dispute gives rise to difficult points of law which could more properly be decided by a court of law,[167] and where a reasonable fear of bias on the part of the arbitrator can be shown.[168] An arbitration clause can never oust the court's jurisdiction.[169]

3.3.2 The arbitration award

The finality of the award is a cardinal principle of arbitration proceedings which is firmly established in our law.[170] The effect thereof is that there is no right of appeal against an outcome of arbitration to a court of law.[171] The award may be made an order of court[172] which can be enforced in the same way as any judgement or order of court.[173] However, a court may, on certain grounds, set aside an arbitration award.[174] An arbitration clause that purports to deprive the court of its power to set

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166 *Yorigami Maritime Construction Co Ltd v Nissho-Iwai Co Ltd* 1977 4 SA 682 (C) 693.

167 *Universiteit van Stellenbosch v JA Louw (Edms) Bpk* 1983 4 SA 321 (A) 344.

168 For example because the arbitrator will be called upon to make findings regarding the integrity of a member of her own profession: *Sera v De Wet* 1974 2 SA 645 (T) 654; or the arbitrator has an interest in the dispute: *Universiteit van Stellenbosch v JA Louw (Edms) Bpk* 1982 3 SA 9 (C) (*in casu* this factor was rejected on the facts).

169 *Schierhout v Minister of Justice* 1925 AD 417; Van Kerken 1993 *ILJ* 24 17.

170 S 28. See also *Dutch Reformed Church v Town Council of Cape Town* (1989) SC 14; *Dickenson and Brown v Fisher's Executors* 1915 AD 166; *RPM Konstruksie (Edms) Bpk v Robinson* 1979 3 SA 632 (C); *Blaas v Athanassiou* 1991 1 SA 723 (W).

171 The matter is *res iudicata*: *Austen v Joubert* 1910 TPD 1095; *Schoeman v Van Rensburg* 1942 TPD 175.

172 S 31(1). *Cf De Villiers v Stadsraad van Pretoria* 1967 4 SA 533 (T).

173 S 31(3).

174 In terms of s 33(1) of the Arbitration Act.

aside or enforce an award, is illegal on the grounds of public policy.[175] A party who is dissatisfied with an arbitration award has two remedies, namely remittal and setting aside of the award.[176] Remittal entails the referring back of the dispute to the same arbitrator to have some defect in the award remedied whereas in the case of a setting aside, the award is set aside and submitted to a new arbitration tribunal.[177] Remittal can only take place on **good cause** shown, for example in cases of procedural irregularity or where additional evidence has been discovered after the publication of the award.[178] The Arbitration Act[179] provides the following grounds for setting aside an award:

(a) in the case of misconduct by a member of the arbitration tribunal;

(b) where a gross irregularity has been committed in the proceedings of the arbitration tribunal;

(c) where the arbitration tribunal has exceeded its powers; and

(d) if the award has been improperly obtained.

Ground (c) is also available under the common law.[180] The courts have held that

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175 An agreement to deprive the courts of their normal jurisdiction is contrary to the public interest and therefore void: *Schierhout v Minister of Justice supra*. See also Christie 421-422; Joubert 137.

176 In terms of ss 32 and 33 of the Arbitration Act.

177 Butler and Finsen 285.

178 *Dutch Reformed Church v Town Council of Cape Town* (1898) 15 SC 14 23.

179 S 33(1).

180 *Dickenson & Brown v Fisher's Executors* 1915 AD 166 175.

the grounds for setting aside the award are limited to these statutory grounds.[181]

3.3.3 Advantages of arbitration

The biggest advantage of arbitration is the finality of the arbitrators' award[182] in contrast to the right of appeal that a dissatisfied party has in a civil court. Arbitration is also chosen to avoid the heavier expenses of formal litigation as well as court delays and the publicity of trials.[183] It is also very practical for parties to a contract to agree that a dispute will be determined by an independent arbitrator appointed by them.[184] The parties themselves may decide who will be selected or how the arbitrator will be selected, which procedures will be adopted, how the evidence will be obtained and implemented, if experts will be used and whether lawyers will be permitted to appear.[185] It has been held by the court that counsel should be appointed to conduct the arbitration in a case involving not only technical issues, but also questions of law.[186]

In cases of disputes arising from international contracts, arbitration is much more desirable than litigation in a foreign court where the proceedings are conducted in a foreign language by foreign lawyers who probably have the exclusive right of audience in a foreign court. In terms of an international arbitration agreement, disputes can be resolved in a neutral locality by a tribunal whose members are

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181 *Dickenson & Brown v Fisher's Executors supra* 174-175. See also Butler and Finsen 291.

182 S 28.

183 On the advantages of arbitration, see in general *Dutch Reformed Church v Town Council of Cape Town supra*.

184 There are no rules regarding the appointment of arbitrators but certain guidelines can be derived from the case law. See Smith 278 *et seq* for an overview of the more salient principles.

185 Smith *Arbitration* 269; Christie 421-422.

186 *Krugersdorp Municipality v Griffin Engineering Co Ltd* 1924 WLD 288 289.

selected by agreement according to agreed procedures in a language also regulated by agreement.[187] Arbitration can also be conducted under the supervision of one of the many international arbitral institutions that exist in centres throughout the world, such as London, New York and Amsterdam.[188] These institutions provide arbitrators as well as the necessary administrative back-up to facilitate the resolution of disputes.[189] In the case of a dispute between international parties, arbitration is preferable to litigation because of the absence of an international court to deal with such disputes, resulting in the claimant being obliged to have recourse to the unfamiliar courts of the defendant's home country or place of business.[190] It must be kept in mind, however, that, although arbitrators have knowledge of the industry, they are frequently not skilled in dispute resolution or in judicial determination which can in turn lead to arbitrations becoming very protracted and expensive because of the arbitrators' inability to dispose of procedural matters before getting to the real issues. This problem is worsened by the absence of legal representation which is so frequently sought by arbitrators.[191] Disputes may end up in court anyway as the dissatisfied party has redress to the courts upon a showing of good cause.[192] The arbitration clause only delays and does not exclude the interposition of the court provided, as stated before, a party can show good cause for the arbitration agreement to be negated.[193]

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187 Aaron 1990 *SALJ* 633.

188 Aaron 1990 *SALJ* 636.

189 *Ibid.*

190 Unless the jurisdiction of a particular court has been agreed to: Butler and Finsen 297.

191 Knight and Fitzsimons 19.

192 See par 3.3.1 *supra*.

193 *Davies v South British Insurance Co* (1885) SC 416. See also Van Kerken 1993 *ILJ* 17; Butler and Finsen 297-298.

3.4 Mediation

Arbitration must be distinguished from mediation, a process in which an impartial and neutral person, acceptable to all parties, assists them in reaching a voluntary settlement with regard to their dispute.[194] A mediator cannot, however, impose a binding settlement or finding on the parties,[195] therefore I do not consider it to be a practical procedure to be followed in the case of disputes arising from ES liability.

3.5 Referees

Arbitrators should also be distinguished from referees. Referees are appointed by the supreme court in any civil proceedings provided the appointment is made with the consent of the parties.[196] A referee does not resolve a dispute, but assists the court in investigating facts on which the court's decision will be based.[197] The function of the referee is to conduct an inquiry for example, into matters of a scientific or technical nature which cannot conveniently be done in the court, and to draft a report which may or may not be adopted as a finding of the court. In conducting this inquiry the referee has the power to call witnesses and to compel the production of evidence.[198] In a civil action pertaining to ES liability, the court may with the consent of the parties, appoint a referee to advise it on technical matters such as the architecture of an ES.

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194 Smith *Arbitration* 271.

195 *Ibid.*

196 S19 *bis* of the Supreme Court Act 59 of 1959.

197 Smith *Arbitration* 271-272.

198 *Ibid.*

3.6 Enforcement of foreign arbitration awards

In the case of disputes that arise between parties from different countries, there are various Arbitration Codes relating to international bodies which provide arbitrators and facilities for conducting arbitrations.[199] Most countries have statutes regulating arbitration that provide for the enforcement of foreign arbitration awards which must be taken into account when arbitration is considered in any country.[200] In South Africa foreign arbitral awards can be enforced in the High Court in terms of The Recognition and Enforcement of Foreign Arbitral Awards Act.[201]

3.7 Conclusion

ADR mechanisms such as arbitration can be especially useful in cases concerning the computer industry as the judiciary often lack knowledge of the high technology involved and its products.[202] In the case of ES technology it may be advantageous to make use of an arbitrator that is skilled in the field of AI and its applications. The fact that many software contractors adopt arbitration or mediation clauses proclaim

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199 The United Nations Commission on International Trade Law (UNCITRAL) adopted the UNCITRAL Arbitration Rules in 1976 and devised the *UNCITRAL Model Law on International Commercial Arbitration* in 1985 which has been adopted by various countries eg Australia, Canada and Hong Kong: Butler and Finsen 298-299; Knight and Fitzsimons 18.

200 The Convention on the Recognition and Enforcement of Foreign Arbitral Awards (**The New York Convention**) is the most important international treaty relating to international commercial arbitration. See Aaron 1990 *SALJ* 633. By the end of 1990 more than eighty countries had acceded to the Convention. South Africa acceded in 1977 and consequently enacted Act 40 of 1977: Butler and Finsen 311.

201 40 of 1977 s 3. On international arbitration in general, see Butler and Finsen 296-316.

202 This is not meant as a reflection on the court's legal competency, but only means that the cost and uncertainty of litigation can be reduced if the matter is heard before a tribunal knowledgeable about computers. The court would probably appoint a knowledgeable assessor to assist in such a case.

the obvious advantages of alternative dispute resolution methods as well as the need for access-to-justice experienced by software producers and consumers. However, the adoption of ADR clauses such as arbitration alone, does not render sufficient access to justice.[203] It is my submission that the acces-to-justice ideal would be even further enhanced by the adoption of strict liability principles to determine certain delictual liabilities arising from the use of software.[204]

4. Conflict of laws

4.1 Introduction

Because of the fact that the computer industry often involves parties from different countries, the role of private international law in the determination of legal liability cannot be ignored. With regard to contractual liability, computer contracts with "choice of law" clauses indicating a foreign legal system,[205] may complicate actions for damages. Not only are there practical difficulties in litigating against foreign software companies based in other countries, the application of foreign regimes of civil liability also has to be contended with.[206] The same difficulties may be experienced in regard to delictual liability, when the law of the place where the delict was committed, has to be determined.[207] For example, where the damage incurred by the user of software in South Africa was caused through a fault of the KE in the employ of the ES producer situated in California, the question arises which country's

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203 See the disadvantages of arbitration referred to above in par 3.3.2 *supra*.

204 See ch 7 par 7.1 *infra*.

205 See appendix IV par (5) and appendix V par (7). See also Van der Merwe 70.

206 According to Eiselen 1995 *SA Merc LJ* 13, most jurisdictions are fairly liberal in permitting parties to determine the legal system that will govern their contracts. Parties should therefore make good use of a "choice of law" clause to avoid legal systems unfavourable to the type of contract entered into.

207 See par 4.4.2 *infra*.

law would be the law of the place where the delict was committed - South Africa or California?[208] Furthermore, it is of little use when a judgement of one country is not recognised and cannot be enforced in the country of the person against whom it has been made, especially in the case of such an international industry as the computer industry. In this regard the rules and principles relating to the recognition and enforcement of foreign judgements are relevant. Various multilateral and bilateral treaties are in existence between nations that concern the recognition of foreign arbitration awards, judgements, processes of courts and intellectual property.[209] Forsyth[210] points out that the recognition and enforcement of foreign judgments is a difficult and uncertain area of private international law, involving the unique concept of international jurisdiction or competence.[211] Since even a cursory discussion of this topic would involve a lengthy digression into private international law-issues, such a discussion is not advanced.[212]

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208 For a discussion of the *lex loci delicti commissi*, see par 4.4.2 *infra*.

209 For example the Berne Convention conceming the recognition of intellectual property rights and the Convention on International Contracts for the Sale of Goods: see Edwards 390.

210 At 333.

211 The term "international jurisdiction or competence" means neither that the foreign court would have had jurisdiction in terms of the SA jurisdictional rules, nor that the foreign court had jurisdiction in terms of its own jurisdictional rules; it is rather a term of art unique to the recognition and enforcement of foreign judgments and its meaning cannot be ascertained by reference to the rules of other branches of the law: Forsyth 336.

212 See Forsyth 333-383; Edwards 387-401. See also the Enforcement of Foreign Civil Judgements Act 32 of 1988 which provides a relatively simple procedure whereby foreign money judgements may be enforced in South Africa, as well as the Protection of Businesses Act 99 of 1978, which, *inter alia*, also prohibits the recognition and enforcement of a foreign judgement for multiple or punitive damages in the Republic (s 1(A) read with s 1(3). The objective is clearly to protect SA defendants from foreign antitrust judgements and excessive amounts of damages. The provisions of both these statutes are relevant in the case of actions for damages based on ES liability, since such actions would entail money judgments as well as the risk of punitive damages in the case of successful product liability claims in for instance, the USA: see ch 5 part I par 1.1 *infra*.

The doctrine of conflict of laws entails the resolution of conflicts that arise in private law relationships which involve a relevant foreign element. Conflict of law spans three distinctive areas,[213] namely:

(a) the jurisdiction of the forum, which refers to the competency of the forum to hear and determine a case;

(b) the selection (by using conflict rules) of the appropriate rules of a system of law which the forum should apply to resolve the dispute as well as the extent to which the chosen *lex causae*[214] should be applied; and

(c) the recognition and enforcement of judgements rendered by foreign courts or foreign arbitrations awards.

An in-depth discussion of the rules and principles relating to private international law or the "conflict of laws"[215] in cases of ES liability falls outside the scope of this study, therefore only certain aspects pertinent to the situation involving ES liability will be referred to.

4.2 Jurisdiction

The choice of a specific legal system does not mean that the courts of that system will have jurisdiction over the dispute as questions of jurisdiction are determined by

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213 Edwards 298.

214 The *lex causae* refers to the system of law chosen to be applied in resolving the issue.

215 Knight and Fitzsimons 19. "Private International law" is that part of national law that deals with the application of foreign legal principles in a national court. Also known as "conflict of laws", it is actually not a part of international law but resides under national law. See also Edwards 297 who defines the "conflict of laws" as "that branch of a country's national law which is applied when an issue involves cognisance of a foreign country's legal system".

the national legal system of the forum itself (the *lex fori*).[216] In fact, the *lex fori* governs all issues pertaining to procedure.[217] A South African court will only assume jurisdiction of a dispute involving foreign parties if some link exists between the territory within which the court operates and one of the parties or the facts from which the dispute arose.[218] These links are called "jurisdictional connecting factors".[219] These *rationes jurisdictionis* may consist of domicile, residence, commission of a delict, creation of a contract, breach of a contract, submission or the situation of property.

The basis for jurisdiction in our law is the doctrine of effectiveness - that is the power of the court to give an effective judgement.[220] Therefore, a court will not adjudicate a matter if the person or property of a peregrine defendant is not arrested or attached.[221] The plaintiff, as *dominus litis* may of course always select the forum of the defendant's domicile or residence to institute an action.[222] In general, the plaintiff will institute action in the forum of the area where the defendant resides.[223] The significance of the forum is that the *lex causae* is determined according to the conflict rules of the *lex fori*.[224] Apart from territorial jurisdiction and submission, the

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216 Forsyth 17.

217 *Ibid.*

218 Forsyth 142.

219 *Ibid.*

220 *Steytler v Fitzgerald* 1911 AD 295; Forsyth 142.

221 This is known as arrest or attachment *ad confirmandam jurisdictionem*: Forsyth 175-186; Edwards 329.

222 Forsyth 176.

223 This is the *actor sequitur forum rei* rule: *Sciacero & Co v CSAR* 1910 TS 119. See also Forsyth 143.

224 Forsyth 17-18.

court's jurisdiction will depend on the nature of the action,[225] the nature of the relief claimed, or on both.[226] With regard to ES liability, the nature of the action will either be contractual or delictual and the nature of the relief will be that of a claim sounding in money (a claim for damages for loss suffered by the use of an ES).

In terms of common law, the court in whose area the contract was concluded or where performance was to have occurred, or where breach of contract occurred, would be vested with jurisdiction in cases of claims sounding in money *ex contractu*, such as claims arising from harm caused by the use of ES's.[227] In the case of an action *ex delicto* the court in whose area the delict was committed is vested with jurisdiction.[228] Jurisdiction may also be acquired through submission to a court's jurisdiction provided there is an existing ground for jurisdiction present, for example that the delict occurred within the area of the court.[229] In terms of the doctrine of prorogation, submission may confer jurisdiction on a court which would otherwise not have been vested with jurisdiction.[230] The court must, however, have jurisdiction over the subject-matter of the suit.[231] South African courts will not assume jurisdiction on the ground of submission only in certain types of cases such as divorce proceedings,[232] title to foreign land,[233] and in cases where both parties are peregrines and the cause of action arose outside the court's area of

225 *Steytler v Fitzgerald* 1911 AD 295.

226 *Estate Agents Board v Lek* 1979 3 SA 1048 (A); *Hugo v Wessels* 1987 3 SA 837 (A). See also Edwards 328; Forsyth 146.

227 Brooks 347.

228 *Ibid.*

229 Brooks 348.

230 Forsyth 173.

231 *Ibid.*

232 *Brecher v Brecher* 1947 3 SA 225 (SWA) 228.

233 *Eilon v Eilon* 1965 1 SA 703 (A).

jurisdiction.[234] Litigants are therefore not free to establish jurisdiction by themselves, the court will first have to decide whether it is prepared to accept the parties' submission to its jurisdiction or whether it should not exercise jurisdiction because the submission was to a foreign tribunal.[235] South African courts have a discretion whether to stay or hear the matter and parties cannot exclude the courts' jurisdiction through private agreements concluded prior to the cause of action.[236] According to Forsyth,[237] the circumstances in which our courts would refuse to treat submission as a sufficient connecting factor, is uncertain.

4.3 Choice of law

Once jurisdiction is established the court must decide what law should be applied in the ensuing litigation. This is the second area of conflict of laws referred to earlier[238] and is known as "choice of law". This involves the determination of the appropriate *lex causae* (applicable legal system) to govern the legal issue at hand. The *lex causae* may, of course, be a foreign legal system.

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234 *Towers v Paisley* 1963 1 SA 92 (E); *Greater Services (Pty) Ltd v Du Toit* 1975 1 SA 260 (C).

235 Forsyth 174. See also appendix V par (7) for an example of a submission to jurisdiction clause: " This agreement shall be governed and construed in accordance with English Law and be subject to the **jurisdiction of the Courts in England**."

236 *Yorigami Maritime Construction Co Ltd v Nissho-Iwai Co Ltd* 1977 4 SA 682 (C) 692; *Butler v Banimar Shipping Co SA* 1978 4 SA 753 (SE).

237 At 174.

238 Par 6.1 *supra*.

4.3.1 Contract

In the case of an international contract the *lex causae* consists of "the proper law of the contract" which must be ascertained or confirmed by the forum.[239] The proper law of a contract is the law of the country which the parties have agreed, or intended, or are presumed to have intended, to govern it.[240] The following paragraphs contain examples of clauses regulating the applicable legal system:

> This licence statement shall be construed, interpreted, and governed by the laws of the State of California.[241]
>
> This agreement shall be governed and construed in accordance with English Law and be subject to the jurisdiction of the Courts in England.[242]

According to the principle of **party autonomy**, contractors have the right to choose their own law. However, the judicial limits of party autonomy have not yet been decided in our law and there are differing opinions as to whether "absolute" party autonomy exists.[243] On the one hand considerations of freedom of contract, the protection of justified expectations and policy interests of certainty need to be advanced, but on the other hand the evasion of mandatory rules and the enforcement of contracts that are *contra bonos mores* in terms of the forum's legal system, justify restrictions on party autonomy.

It is accepted though, that theoretically at least, the autonomously chosen law can be

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239 Edwards 359 as well as cases cited in fn 1.

240 "..the intention of the parties to contract is the true criterion to determine by what law its interpretation and effects are to be governed": *per* De Villiers JA in *Standard Bank v Efroiken and Newman* 1924 AD 171 185. See also *Guggenheim v Rosenbaum* (2) 1961 4 SA 21 (W); *Berman v Winrow* 1943 TPD 213.

241 See appendix IV par (5).

242 See appendix V par (7).

243 Edwards 361; Forsyth 266-270.

limited by common law, statute or international convention prevailing in the relevant country. In this regard the decision of *Vita Food Products Inc v Unus Shipping Co Ltd*[244] is authority in English common law jurisdictions for the contention that parties are free to choose as their applicable law a legal system which has no factual connection with their contract as long as the choice is *bona fide*, legal and not contrary to public policy. This means that the proper law must not have been chosen to evade a mandatory provision of the law[245] with which the contract has its closest and most real connection.[246] Consumers and employees in unequal bargaining positions need to be protected from unfair "choice of law" clauses. These clauses generally form part of standard form contracts which are drawn up unilaterally by the stronger party with the result that party autonomy does not really exist. As shown earlier, computer contracts are almost always standard form contracts[247] and users of software are forced to agree to unnegotiated terms.

European countries have restricted the application of the party autonomy principle through concluding the Convention of Rome on Contractual Obligations.[248] This Convention has its impact on South African law through the influence of English law on our private international law and the fact that the Convention has worldwide application.[249] It is therefore quite possible for a South African ES user to be subjected to the Rome Convention when she is involved in litigation in one of the contracting member states of the EU. The purpose of the Convention is to establish uniform choice of law rules for contractual obligations throughout the EU.[250] Apart

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244 [1939] AC 277, [1939] 1 All ER 573.

245 *Ius cogens.*

246 *United Nations v Atlantic Seaways Corporation* (1979) 2 FC 541.

247 See ch 3 par 2.4.1 *supra.*

248 (1980) *OJ* L266.

249 Edwards 364.

250 Edwards 364 fn 15; Cheshire and North 460.

from encouraging the unification process in civil and commercial matters, the Convention will inhibit "forum shopping"[251] and increase legal certainty.[252] The Convention has come into force in all the member States except Spain and Portugal, and it is expected that any country which may join the EU in the future will accede to the Convention.[253]

Article 3(1) of the Convention sets out the basic principle, namely that "a contract shall be governed by the law chosen by the parties". However, party autonomy is restricted in the following way:

(a) derogation from a country's mandatory rules is prohibited;[254]

(b) mandatory rules are applied to protect consumers and workers from prejudice through a choice of law;[255]

(c) application of mandatory rules of the forum (for example rules against cartels and unfair competition) shall not be prevented by the *lex causae* that would have been applicable;[256] and

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251 This refers to the deliberate choice of a suitable forum in order to attract the application of a system of law favourable to the plaintiff's claim.

252 Cheshire and North 460.

253 *Ibid.*

254 Art 3(3).

255 Arts 5(2) and (6).

256 Art 7(2) states:

> Nothing in this Convention shall restrict the application of the rules of the law of the forum in a situation where they are mandatory irrespective of the law otherwise applicable to the contract.

This provision ensures the preservation of protectionist domestic rules such as the

(d) the court has a discretion to apply mandatory rules of a third country, which are neither those of the forum nor those of the *lex causae*, with which the cause of action has a close connection.[257]

The Convention applies worldwide regardless of any connection in the contract or of a party to a EU contracting state.[258] The dispute need only be tried in a contracting state to the Convention for it to take effect. The Convention does not prohibit contracting states from joining other international conventions that cover the same ground, such as the Hague Convention of 1985 on the law applicable to contracts for the international sale of goods.[259]

In the absence of a choice of law by the parties, a governing law is assigned to the contract.[260] In such cases the proper law of the contract is the law with which the contract is most closely connected, which may, for example, be the *lex loci contractus* or the *lex loci solutionis*.[261]

4.3.2 Delict

The question of whether a delict was committed is determined by the *lex loci delicti*

UCTA in England. In terms of s 27(2) of the UCTA contracting parties most closely connected with this country are prevented from contracting out of the controls of the UCTA by a choice of law of a country outside the United Kingdom. The choice of law is not struck down in such a case; the foreign law must still be applied to the contract, but subject to the provisions of the UCTA.

257 Art 7(1).

258 Art 2. See Cheshire and North 475.

259 Art 21. See Cheshire and North 521.

260 Forsyth 271.

261 *Ibid.*

commissi.[262] Delictual actions involving foreign elements where the delict was committed within the territorial sovereignty of the Republic is governed by the *lex fori*.[263] In the case of a delict comitted outside the borders of the Republic there is no certainty in our law concerning the conflict rule to be applied in the selection of the *lex causae* to resolve the dispute.[264] The choice of law in delict may consist either of the *lex fori*, the *lex loci delicti commissi* or the *lex propria delicti*.[265]

The theory that tort liability is governed by the *lex fori* may lead to "forum shopping".[266] In a claim involving product liability, for example, it is more advantageous to institute action in the USA because juries award higher amounts of damages and there is also the possibility of punitive damages.[267] The main argument in favour of the application of the *lex fori* is the similarity of delictual liability to criminal liability for which it is universally accepted that foreign law is inapplicable and that it must be ruled by the public policy of the forum. Today it is realised that criminal law and delictual law have completely different objectives.

The *lex loci delicti* is currently applied in Europe and is grounded in the principle of territorial sovereignty according to which legal consequences can only be attributed by the law of the place where the events have occurred.[268] Another difficulty arises

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262 The *lex loci delicti commissi* refers to the law of the place where the delict was committed: Edwards 375.

263 This refers to the law of the forum: Edwards *ibid*.

264 Morris 276 points out that the choice of law with regard to the law of torts was a neglected topic for centuries, but the recent pressures of the technological revolution as applied to the manufacture and distribution of products, as well as the current means of transportation and communication, have awakened a new-found interest.

265 The proper law of the delict: Edwards 375.

266 See par 4.4.1 *supra*.

267 See ch 5 part I par B 1.1.1 *infra*.

268 Edwards 375.

in cases where the defendant's acts take place in one country and the ensuing harm is inflicted in another. In the context of ES's this is a very real problem due to the quantity of foreign-produced software available on domestic markets. If one also keeps in mind that there may be a multitude of parties involved in the production of an ES,[269] it is conceivable that even the relevant act could possibly have taken place in more than one country. It is, for example, possible that the DE compiled the knowledge base in the United Kingdom to be built into an ES which was developed in the United States and sold to a user in South Africa. When harm is consequently suffered, it must first be established where the defect occurred and then decided where the act took place.

The *lex propria delicti* entails that the rights and liabilities of parties regarding an issue in tort will be determined by the law of the country which has the most significant relationship to the events.[270] The factors taken into account include the place where the injury occurred, the domicile and place of business of the defendant and the place where the relationship is centred.[271] A further problem is to determine where the *locus delicti* is when the defendant's act takes place in one country and the resulting harm is inflicted in another place. In the case of an ES, such a situation may easily occur where the ES is produced in a foreign country but used in another country with harmful consequences. Morris[272] points out that this problem occurs frequently across the state borders of America. The Second Restatement of Torts simply lists the place where the injury occurred and the place where the conduct causing the injury occurred as some of the factors which should be taken into account in determining the law of the state which has the most

269 See ch 2 par 8.2 *supra*.

270 Edwards 375.

271 Edwards 376.

272 At 294.

significant relationship to the occurrence and the parties. According to Morris,[273] the only consistency in this area of conflict of laws is that not all torts are governed by the same rule. He proposes that the sequence of events be looked at to establish where, in substance, the cause of action arose.[274] For example, the torts of libel and slander are committed where the defamatory statements are published and not where they are posted or uttered.[275] It has also been held in a case of fraudulent misrepresentation that the substantial wrongdoing is committed where the statement is made.[276] In the case of a defective ES with an intellectual output,[277] which is analogous to the making of a misstatement, it may also be held that the place where the defective output is used, constitutes the proper law of the delict. The English and Scottish Law Commissions recommended in 1990 that the *lex loci delicti* should be applied in English law of conflicts, and not the *lex fori* except in cases where public policy reasons need to be invoked by the forum.[278] In cases of personal injury and damage to property, the law of the country where the person or property was at the time of injury, is the applicable law, otherwise the applicable law would be that of the country where the most significant sequence of events occurred.[279]

In South Africa, the general consensus is that the question of choice of law in delict is *res nova*, and the courts may adopt any of the above rules to establish a governing system when the need arises.[280]

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273 *Ibid.*

274 Morris 295. See also *Castree v ER Squibb Ltd* [1980] 1 WLR 1248; *Multinational Gas Co v Multinational Gas Services Ltd* [1983] Ch 258.

275 *Gorton v Australian Broadcasting Commission* [1973] 22 FLR 181.

276 *Cordova Land Co Ltd v Victor Brothers Inc* [1966] 1 WLR 793.

277 See ch 2 par 10.1.2 *supra*.

278 Morris 296-297.

279 Morris 297.

280 Forsyth 287.

4.4 Conclusion

Choice of law has an important role in the determination of ES liability. In the international world of high technology applications it may be judicious to be aware of the legal rules which determine the governing systems in the event of civil liabilities incurred. As will be seen in the comparative law discussion,[281] other delictual liability regimes apply strict liability principles to actions arising from product liability, which may include software products.[282] The advantages to the plaintiff of a strict liability regime is apparent and the latter must be aware of the implications when choosing a governing legal system.[283] It may also be that unfair contract terms are outlawed by the relevant foreign legal system, much to the user's favour.[284] Parties in contract and delict should therefore also take heed of the content of the foreign liability regimes before making a choice of law.

5. Copyright law with regard to computer programs

5.1 Copyright and expert systems

In dealing with ES liability it may be helpful to refer to the principles of copyright law with regard to computer programs.[285] Copyright law in South Africa is created by

281 Ch 5 *infra*.

282 *Ibid*.

283 A choice of law clause pertaining to delictual actions is often contained in software licensing contracts: see ch 3 par 2.5 *infra*.

284 For example, the prohibition of certain exclusion clauses by the UCTA of the UK: see ch 3 par 2.4.2 *infra*.

285 See in general on the copyright in computer programs, Visser 1984 *CILSA* 33; Van der Merwe 16 *et seq*; Morgan 1991 *Elektron* 9; Dean 1992 *DR* 755; Copeling 8.

statute only and is governed by the Copyright Act.[286] Of particular interest to ES's, is the manner in which the legislator determines the holder of copyright in a work such as a computer program, which was created by **teams of people** as opposed to that of work done by individual creators.[287] Because the identification of all possible liable parties in case of harm caused by the use of a defective ES may also be complicated by the fact that teams of people, rather than easily identifiable individuals, are involved in the production of an ES,[288] the question arises whether it might be meaningful to apply a solution analogous to that in the provisions of the Copyright Act, to the problem of determining all possible liable parties when defective ES's are used.[289]

5.2 Ownership of copyright in a computer program

The Act does not contain a comprehensive definition of the term "copyright",[290] but it may be described in general terms as "that right which vests in a qualified author of an original work recognised by the Act (or a person having acquired rights from or through him) and which enables him to prevent unauthorised copying of that work."[291] Ownership of copyright vests in the "author" or in the person acquiring rights from the author[292] unless one of four exceptions to this rule applies.[293] Of

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286 Act 98 of 1978. S 1(1) of the Act states that no copyright or right in the nature of copyright may subsist otherwise than in terms of the Act or some other enactment in that behalf.

287 S 1(1).

288 The specific nature of an ES ensures at least two parties involved: one for the **knowledge base** and one for the **inference engine**: see ch 2 par 5.1 *supra*.

289 See par 5.3 *infra*.

290 S 1(1) states that "copyright" means "copyright under the Act".

291 Copeling 4.

292 S1(1).

293 S 21(1)(a)-(d).

these exceptions only the following two are applicable to computer programs:[294]

(a) where a work is made under the control of the state or an international organisation;[295] or

(b) where a work is made in the course of the author's employment by another person under a contract of service or apprenticeship.[296]

Under the first exception the copyright in the work vests in the particular state department or international organisation, and under the second exception it vests in the employer of the person who creates the work.[297] The parties concerned may agree to exclude the operation of all the exceptions mentioned,[298] but not the one relating to the state and the international organisations.[299]

The legal object of copyright in computer programs is the skill and labour employed by the author to create the original computer program.[300] As such, it is an intangible object which must be distinguished from the tangible, physical product, for example the compact disk (CD) or hard disk of the computer which is only the

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294 The remaining two exceptions are only applicable to literary or artistic works, and persons who are commissioned to take photographs, paint drawings, etc: s 21(1)(b) and (c) of Act 98 of 1978.

295 S 21(1)(b).

296 S 21(1)(d).

297 Copeling 10. In the case of delictual liability, the developer as employer would also be held liable for harm caused by the delicts of employees, through the principles of vicarious liability: see ch 3 par 3.4.2.1 *supra*.

298 (a) and (b) *supra*.

299 S 21(1)(a).

300 Copeling 61.

embodiment of the author's skill and labour.[301] These two kinds of property, the copyright and the physical medium, exist separately from each other and can be transferred independently.[302] Therefore, a person who becomes owner of the medium, for example a CD containing an ES, does not in consequence of the purchase of the CD become the owner of the copyright.[303]

5.3 The meaning of "author" with regard to a computer program

The term "author" is defined in the Act according to the specific category of work involved and may have a natural or a special meaning.[304] The Act was specifically amended[305] to protect computer programs *sui generis* which were previously only protected as a *species* of the *genus* "literary works".[306] The author of a computer program[307] is the person who exercises control over the making of the

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301 The distinction between these two objects, ie the incorporeal *res* consisting of the intellectual property right in the software program, and the corporeal *res* consisting of the physical embodiment of the software, is mainly responsible for the sometimes incomprehensible classification in Anglo-American law of software into products or services: see ch 3 par 2.6 *supra*.

302 See Reed's cogent argument that two contractual agreements always exist when software is used, namely (i) the agreement in terms whereof the software is acquired (the acquisition contract), and (ii) the agreement regulating intellectual property rights (usually the licensing agreement): ch 3 par 2.6.1.1 *supra*.

303 See also ch 3 par 2.5.1.2 *supra* with regard to the nature of software licensing.

304 S 1(1) of Act 98 of 1978.

305 S 1(1) amended by the Copyright Amendment Act 125 of 1992.

306 *Northern Office Micro Computers (Pty) Limited and others v Rosenstein* 1981 4 SA 123 (C); Van der Merwe 17. See in general on the Amendment Act 125 of 1992 and its significance for computer programs, Dean 1992 *DR* 755.

307 A computer program is defined in the Act as:

> a set of instructions that is fixed or stored in any manner and which, when used directly or indirectly in a computer, directs his operation to bring about a result.

program.[308] This definition is similar to the definition of the author of a cinematograph film or of a sound recording who is the person by whom the arrangements for the making of the work were made.[309] In terms of this definition it is possible for an author to not be the actual creator of a work, but to be the person who is responsible for the creation of a copyright work. The historical assumption that a copyright work is made by an author who is intimately involved with and responsible for its creation is therefore no longer applicable. Because of the many and varied people involved in the creation of computer programs, authorship of these programs is ascribed to the persons responsible for the making of "arrangements of the work" or "exercising control over the making of the program". Dean[310] points out that in the case of mass-produced computer software, the author would then be the company or other juristic person which has developed and published the software,[311] and not the individuals[312] involved in the making of a program. In this respect there is a complete deviation from the natural perception[313] of authorship in literary, dramatic, musical and artistic works in that the making of arrangements is more important than actual creativity. The reason for this deviation is the fact that **teams of people** are usually involved in the creation of sound recordings, cinematograph films and computer programs which could lead to a heavy evidential burden in proving a title to copyright if all the individuals involved were considered authors in terms of the Act. In the case of computer software the practical implication of the Act is simply that the company or other juristic person which has

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308 *Ibid.*

309 S 1(1) of Act 98 of 1978.

310 1992 *DR* 756.

311 Such a person or entity would be the developer in terms of the identified producers of ES's: see ch 2 par 8.2.4 *supra*.

312 In the case of an ES, such individuals would, for example, refer to the DE or the KE: see ch 2 par 8.2 *supra*.

313 Generally the word "author" refers to the maker or creator of the work.

developed[314] the software is the author. The effect of this provision is to ease the evidential burden in proving the subsistence of and title to copyright which, in turn, will have the effect of greater enforceability and effectiveness of copyright in computer software in South Africa.[315]

5.4 Conclusion

The question arises whether this practical solution may also be applied to hold the developer of an ES (who, in most cases is also the author of the ES in terms of the Act),[316] liable as the person or entity that exercises control over the making of the system. Such an application will ease the difficult burden of the plaintiff in identifying and proving the negligent conduct of the culprit(s) from among the many possible liable parties in the case of a defective ES.[317] However, such liability of the developer will be identical to the liability of a manufacturer of a defective product,[318] in terms of which the developer of the software may in any case be held delictually liable.[319] Therefore it does not seem as if anything is to be gained by developing a rule in analogy with that of the Copyright Act.

6. Effect of the Bill of Rights on civil liabilities

6.1 Introduction

Although the full effect of a Bill of Rights on private law - relationships is still

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314 The developer of the ES: see the diagram in fig 5 *supra*.

315 Dean 1992 *DR* 756.

316 S 1(1) of Act 98 of 1978.

317 See ch 2 par 8.2 *supra*.

318 See ch 3 par 3.3.6 *supra*.

319 See ch 6 par 5 *infra*.

uncertain, commentators are in agreement on its influence in various areas of private law.[320] Of particular importance to the issue of ES liability is the possible horizontal operation of the Bill of Rights[321] and its effect on the relevant contractual and delictual actions arising from the use of ES's. With regard to contractual liability such application could mean that whenever a right to performance in terms of a valid contract limits fundamental rights, it cannot be enforced by a civil claim.[322] Ultimately, the individual right to freedom of contract may be subverted by the direct horizontal application of fundamental rights.[323] With regard to delictual liability, horizontal application could have the effect that the protection of fundamental rights takes precedence above the other subjective rights protected by the law of delict but not entrenched in the Bill of Rights.[324]

A pertinent issue in regard to ES liability is the possible infringement of the right to freedom of speech and expression, by the enforcement of a strict products liability regime in the case of information products such as books, manuscripts and software programs.[325] In the USA, the question has arisen whether strict liability may be imposed on publishers and authors for injuries resulting from false information contained in their publications.[326] The courts have been unwilling to find for such

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320 Midgley(1) 19. See also Van der Vyver 1994 *THRHR* 378-395; Van Aswegen 1994 *THRHR* 448-460 as well as 1995 *SAJHR* 50-69; Visser and Potgieter 1994 *THRHR* 493-498; Van der Walt 1994(2) *Codicillus* 4-18; Leon 1996 *DR* 461-464; Du Plessis 1996 *Stell LR* 3-23.

321 Chapter 2 of the Constitution of the Republic of South Africa Act 108 of 1996.

322 Van Aswegen 1995 *SAJHR* 54.

323 Van Aswegen 1995 *SAJHR* 69; Leon 1996 *DR* 463.

324 Van Aswegen 1995 *SAJHR* 59-65.

325 See ch 3 par 2.6.1.1 *supra* for a discussion of "information products".

326 Such liability has already been found in the case of aeronautical charts: *Aetna Casualty and Surety Co v Jeppesen & Co* (1981) 642 F 2d 339 (9th Cir); *Saloomey v Jeppesen & Co* (1983) 707 F 2d 671 (2d): see ch 5 part I par B 3.3 *infra*.

liability because of the danger of suppressing the right to free speech if publishers are threatened with liability for inaccurate or dangerous information.[327]

Another effect will be found in the formulation of legal rules which are determined by policy considerations. A Bill of Rights, which reflects the fundamental legal values accepted in a society, actually represents a crystallised form of public policy which can be applied in the determination of open-ended standards such as the tests used in three of the general requirements for delictual liability in South African law, namely the test for wrongfulness, the test for legal causation or remoteness and the test for negligence.[328]

Constitutionally entrenched rights are traditionally only protected against improper state interference; in other words enforcement takes place on a vertical level in public law between citizen and the state and not on a horizontal level in private law between citizen and citizen.[329] However, a measure of horizontality is recognised worldwide.[330] Van Aswegen[331] comments upon the reason why the horizontal application of a bill of rights has been recognised and accepted in most jurisdictions where basic human rights are recognised, namely the current international trend towards a more communitarian, interventionist welfare-state model. Coupled with the

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327 Lamkin 1994 *ELJ* 765; Whittaker 1989 *LQR* 135: see par 6.3.1 *infra*.

328 Van Aswegen 1995 *SAJHR* 60 points out that the objective reasonableness in the light of the *boni mores* or legal convictions of the community used in the first test, the flexible criterion of a sufficiently close connection in the light of reasonableness, fairness and justice between conduct and harm in the second test, and the elements of policy present in the determination of reasonable conduct in the test for negligence, are text-book examples of open-ended standards utilising policy considerations: see also ch 3 pars 3.3.2.1 3.3.3.2 and 3.3.4.3 *supra*.

329 S 7(1) of the Interim Constitution of the Republic of South Africa 200 of 1993 referred to the enforcement of fundamental rights entrenched in chapter 3 of the 1993 Act against the **legislative and executive organs of state** only.

330 Van Aswegen 1995 *SAJHR* 51.

331 1995 *SAJHR* 51.

development of a doctrine of human rights, the relations between individuals are gradually expanding into the traditional field of public law.[332] This trend is also borne out by the access-to-justice movement discussed earlier.[333] Van der Walt[334] points out that the possibility of allowing for "horizontal seepage" of entrenched rights into the relations **between citizens** was already mentioned during negotiations preceding the drafting of the Constitution.[335] This means that the constitutional guarantee of such rights may to a certain extent also be enforced in private law relationships between private citizens.[336]

The relevance for ES liability lies in the extent to which the fundamental rights may influence the determination and content of such liability. In the event that any civil liability legislation is adopted,[337] indirect horizontal application of the Bill of Rights can take place as the state's legislation will have to comply with the provisions of the

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332 *Ibid.*

333 See par 3.2.1 *supra*.

334 1994 (2) *Codicillus* 4-18.

335 Cachalia *et al* 20 remarks upon the "quietly introduced compromise" between the proponents of the more traditional approach in which the Constitution is primarily a fundamental law that restricts government, and the proponents of a more extensive approach to the Constitution in which the exercise of private power is seen as the greater threat to the exercise of fundamental rights and therefore the application of such rights need to be effected between private citizens. The compromise was reached through providing for the application of the Bill of Rights to common law and customary law: see s 7(2); ss 33(2) and (3) and s 35(3) of Act 200 of 1993.

336 A bill of rights is traditionally seen as a constitutional instrument protecting the basic rights of citizens against infringement by the state and its powerful organs. As such, constitutional principles are only applicable to state action. The possibility of the application of the provisions of a bill of rights to legal relationships between private parties or individuals in the private -law sphere (referred to as *Drittwirkung* in German jurisprudence) has elicited a lot of debate among writers: *Cf* Rautenbach 75 *et seq*; Cachalia *et al* 20; Van der Vyver 1994 *THRHR* 378 389; Van Aswegen 1994 *THRHR* 448 450 and 1995 *SAJHR* 50 52 *et seq*.

337 Such as the strict liability legislation for defective software contemplated in ch 7 *infra*.

Constitution.[338] With regard to common law principles, indirect horizontal application took place in the Interim Constitution via the provisions of sections 7(2), 33(2) and (3) and 35(3). The final Constitution[339] provides for direct horizontal application of the Bill of Rights subject to certain prerequisites.[340]

6.2 Horizontal application

6.2.1 The interim Constitution[341]

The 1993 Constitution made provision for an indirect horizontal effect through firstly, the provisions of section 7(2) which stated that the provisions of Chapter 3 "shall apply to all law in force and to all administrative decisions taken and acts performed during the period of operation of this Constitution". Because of the use of the words "all law in force", section 7(2) could be interpreted to imply that the provisions of Chapter 3 must be applied to existing principles of private law as well.[342] Secondly, section 33(2) stipulated that all rules of common law and customary law is subjected to the fundamental rights and can only be limited in accordance with the requirements of section 33(1).[343] Thirdly, section 33(3) recognized common law and customary

338 Van Aswegen 1995 *SAJHR* 53

339 Act 108 of 1996.

340 S 8 of Act 108 of 1996: see par 6.2.2 *infra*.

341 Act 200 of 1993.

342 Van der Walt 1994 (2) *Codicillus* 7; Cachalia *et al* 20.

343 S 33(1) and (2) of Act 200 of 1993 reads:

law rights other than the ones contained in Chapter 3 insofar as they are not inconsistent with Chapter 3.[344] Lastly, section 35(3) stipulated that a court should have due regard to the spirit, purport and objects[345] of Chapter 3 when interpreting, applying or developing common law and customary law.[346] The effect of the

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(1) The rights entrenched in this Chapter may be limited by law of general application, provided that such limitation -
  (a) shall be permissible only to the extent that it is -
    (i) reasonable; and
    (ii) justifiable in an open and democratic society based on freedom and equality; and
  (b) shall not negate the essential content of the right in question, and provided further that any limitation to
    (aa) a right entrenched in section 10, 11, 12, 13, 14(1), 21, 25 or 30(1)(d) or (e) or (2); or
    (bb) a right entrenched in section 15, 16, 17, 18, 23 or 24, in so far as such right relates to free and fair political activity, shall, in addition to being reasonable as required in pargraph (a)(i), also be necessary.

(2) Save as provided for in subsection (1) or any other provision of this Constitution, no law, whether a rule of the common law, customary law or legislation, shall limit any right entrenched in this Chapter.

344 S 33(3) reads:

> The entrenchment of the rights in terms of this chapter shall not be construed as denying the existence of any other rights or freedoms recognised or conferred by common law, customary law or legislation to the extent that they are not inconsistent with this Chapter.

345 Van der Walt 1994 (2) *Codicillus* 7 fn 9 points out that the word "objects" in s 35(3) probably should have been "objectives" if regard is had to the Afrikaans text which stipulates "oogmerke".

346 S 35(3) reads:

> In the interpretation of any law and the application and development of the common law and customary law, a court shall have due regard to the spirit, purport and objects of this chapter.

provision in section 35(3) was that the Bill of Rights had only mediated or indirect application in relations between private individuals.[347] The fact that section 7(1) specifically excluded the judiciary from the application of the Bill of Rights substantiated the intention of indirect horizontal effect of the drafters of the 1993 Constitution. The principle of mediated application, called *mittelbare Drittwirkung* by German constitutional lawyers, enabled courts to take the entrenched rights and freedoms of Chapter 3 into account when applying principles of common law on a horizontal level, thereby developing the common law in accordance with the spirit and principles of the Bill of Rights over a period of time.

In *Du Plessis and Others v De Klerk and Others*[348] the Constitutional court at last had the opportunity to deliberate upon the vertical or horizontal operation of the fundamental rights provisions, ending the uncertainty created by conflicting decisions of the High Court on this issue.[349] The majority of the court *per* Kentridge AJ found that:

> ...Chapter 3 does not have a general direct horizontal application but that it may and should have an influence on the development of the common law as it governs relations between individuals. I insert the qualification "general" because it may be open to a litigant in another case to argue that some particular provision of Chapter 3 must by necessary implication have direct horizontal application.[350]

In casu the court found that section 15 (1) of Chapter 3 of the Interim Constitution,

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347 Leon 1996 *DR* 461.

348 1996 5 BCLR 658 (CC).

349 In *Mandela v Falati* 1994 4 BCLR 1 (W); *Motala and Another v University of Natal* 1995 3 BCLR 374 (D) the court found that horizontal application of the Bill of Rights exists whereas in *Potgieter en 'n Ander v Kilian* 1995 1 BCLR 1498 (N) and the decision of the court *a quo* in this case, *De Klerk v Du Plessis* 1994 6 BCLR 124 (T), it was held that the provisions of Chapter 3 of the Interim Constitution only have vertical operation and therefore do not have application to any other relationship than that between persons and legislative or executive organs of State.

350 692H.

the "freedom of speech" clause, is not a provision that warrants *direct* horizontal application. However, as "the values it embodies can and must be taken into account in the development of the common law of defamation",[351] *indirect* horizontal application will take place.[352] In other words, the court found that although constitutional rights under Chapter 3 could only be invoked against an organ of State and not by one private litigant against another, a litigant may contend that a statute or act relied on by the other party is invalid because it is inconsistent with the provisions of Chapter 3.[353] Kriegler J (with whom Didcott J concurred) dissented from the majority view and concluded that Chapter 3 was capable of direct horizontal application.[354]

6.2.2 The final Constitution[355]

In the final Constitution[356] provision is specifically made for the horizontal

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351 693B.

352 The court based its finding on the provisions of s 7(2) which provides that "this chapter shall apply to all law in force....", the reference to all law clearly including the **common law**.

S 7(1) provides only for the legislative and executive organs of State to be bound by the provisions of Chapter 3. If it had been the intention of the drafters to bind more people, it could easily have been done through enacting a similar provision to that in article 5 of the Namibian Constitution which expressly binds all organs of State, including the judiciary and where applicable, all natural and legal persons. The use of the words "persons other than those bound in terms of section 7(1)" in section 33(4), and the provision of section 35(3) that "in the interpretation of any law and the application and development of the common law a court shall have due regard to the spirit, purport and objects of this chapter" also indicated that a general horizontal application was not intended.

353 691 C-G.

354 724 B-D.

355 The Constitution of the Republic of South Africa Act 108 of 1996.

356 Act 108 of 1996.

application of the Bill of Rights.[357] Section 8, the application clause of Chapter 2[358] states:

> (1) The Bill of Rights applies to all law and binds the legislature, the executive, the judiciary, and all organs of state.
>
> (2) A provision of the Bill of Rights binds natural and juristic persons if, and to the extent that, it is applicable, taking into account the nature of the right and of any duty imposed by the right.
>
> (3) In applying the provisions of the Bill of Rights to natural and juristic persons in terms of subsection (2), a court -
>
> (a) in order to give effect to a right in the Bill, must apply, or where necessary develop, the common law to the extent that legislation does not give effect to that right; and
> (b) may develop rules of the common law to limit the right, provided that the limitation is in accordance with section 36(1).
>
> (4) Juristic persons are entitled to the rights in the Bill of Rights to the extent required by the nature of the rights and of the juristic persons.

The judiciary is clearly bound by the provisions of section 8[359] and direct horizontal application of the Bill of Rights is possible from the provisions of subsection (2) in that it "binds natural and juristic persons if, and to the extent that, it is applicable, taking into account the nature of the right and of any duty imposed by the right". Furthermore, a court has direct instructions to develop the common law (which includes private law) so that effect can be given to fundamental rights.[360]

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357 Leon 1996 *DR* 461; Du Plessis 1996 *STELL LR* 9. Leon *supra* 464 criticises the implications of s 8 and its consequences for South Africa: Apart from the fact that South Africa is about to become the only constitutional country in the world with a fully horizontal constitution, "such horizontal application of the Bill of Rights would open a legal Pandora's box, the results of which are frightening in their implications for business, let alone the South African economy."

358 Act 108 of 1996.

359 Subsection (1).

360 S 8(3)(a).

Section 8[361] also states that the Bill of Rights applies to "all law" which of course includes private law.[362] According to Du Plessis,[363] the horizontal application of the Bill of Rights brings our Bill of Rights in line with the worldwide growing sentiment in favour of such extended protection:

> This sentiment roots in a recognition of the fact that the state is not the only powerful social institution whose actions can have a far-reaching impact on the lives of "less powerful" people. Individuals sometimes need potent protection of against other equally or even more powerful institutions (and individuals).[364]

The above sentiment is also noted by Van Aswegen[365] who states that the strict seperation between public and private law has gradually eroded during this century towards a more communitarian, interventionist welfare-state model in which the recognition and protection of human rights have expanded to relations between private individuals, and that the horizontal application of a bill of rights to private law has been accepted in most constitutional countries where basic rights are protected in a bill of rights.[366] She, however, favours indirect horizontal application to meet the requirements of extended interpretation.[367]

The interpretation clause contained in section 39 has retained the value statement of the transitional Bill:[368]

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361 Subs (1).

362 Du Plessis 1996 *STELL LR* 10.

363 1996 *STELL LR* 9.

364 Du Plessis 1996 *STELL LR* 9.

365 1995 *SAJHR* 51.

366 These observations are also substantiated by the access-to-justice movement which strives at its base, for effective access to human rights: see par 3.2.1 *supra*.

367 Van Aswegen 1995 *SAJHR* 52.

368 S 35 of Act 200 of 1993.

(1) When interpreting the Bill of Rights, a court, tribunal or forum -

(a) must promote the values that underlie an open and democratic society based on human dignity, equality and freedom;

(b) must consider international law; and

(c) may consider foreign law.

(2) When interpreting any legislation, and when developing the common law or customary law, every court, tribunal or forum must promote the spirit, purport and objects of the Bill of Rights.

(3) The Bill of Rights does not deny the existence of any other rights or freedoms that are recognised or conferred by common law, customary law or legislation, to the extent that they are consistent with the Bill.

According to Du Plessis,[369] the provisions of section 39(3) seem superfluous in the light of the stronger horizontal operation in terms of section 8 which makes the Bill applicable to "all law" in any case. In light of the retention of section 39(3), he suggests that the reference to all law in section 8 probably has to be restricted to law regulating relationships to which the Bill applies while law other than that refers to the legislation as well as the common and customary law referred to in section 39(3).[370] Although the matter will, ultimately, be decided by the Constitutional court, it seems that the Bill of Rights has direct horizontal application and its provisions may therefore be enforced in private law relationships.[371] However, it is trite that no right can be absolute.[372] Excplicit provision is made in the Bill of Rights for the limitation of fundamental rights and freedoms.

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369 1996 *STELL LR* 11.

370 *Ibid.*

371 Based on the provisions of ss 8 and 39, as well as the comments of the writers Du Plessis and Van Aswegen, noted above.

372 Cachalia *et al* 106.

Any limitation of a fundamental right has to be in accordance with section 36(1) and subsection (2) prohibits the limitation of a fundamental right by law except as provided for in subsection (1). Section 36(1) states:

> (1) The rights in the Bill of Rights may be limited only in terms of law of general application to the extent that the limitation is reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom, taking into account all relevant factors including -
>
> (a) the nature of the right;
>
> (b) the importance of the purpose of the limitation;
>
> (c) the nature and extent of the limitation;
>
> (d) the relation between the limitation and its purpose; and
>
> (e) less restrictive means to achieve the purpose.

Section 36 (1) is very similar to the previous limitation clause of the Interim Constitution, namely section 33, except for the omission in the new section of the additional requirement that the limitation of certain rights in relation to political activities had to be "necessary".[373] However, the limiation has to be reasonable **and** justifiable which, according to Du Plessis,[374] can be understood to import necessity.

The way in which the limitation of rights is permitted in our Constitution has been drawn from the Canadian Charter of Rights which involves a two stage process as set out in the case of *R v Oakes*.[375] During the first stage it must be determined whether an infringement of a fundamental right did in fact take place.[376] If an

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373 S 33(1)(b)(bb): see par 6.2.1 *supra*.

374 1996 *STELL LR* 12.

375 1986 26 DLR 4th 200.

376 Cachalia *et* al 106; Devenish 1995 *TSAR* 448.

infringement did take place, the second stage becomes active and involves an inquiry whether the underlying policy of the conduct that caused the infringement is reasonable and democratically justifiable in a free and open democracy and whether an acceptable method for its implementation has been used.[377] In this regard the burden of proof is on the plaintiff.[378] During the judicious weighing up of the competing jurisprudential and other relevant issues, the principle of proportionality is used.[379] Proportionality is established by applying three criteria:[380]

(a) The limitation must be rationally connected to the objective of the underlying policy being promoted - the causation test;

(b) the limitation should be so crafted that it infringes upon the fundamental right as little as possible - the threshold test;

(c) the detrimental effects of the limitation must be in proportion with the extent to which the objective is promoted - the balancing test.

The application of the above criteria set out in the *Oakes* decision[381] negates strict adherence to rigid and inflexible standards. Law is a social science necessitating social and constitutional issues to be determined in light of the fundamental moral and ethical values grounded in the Constitution.[382]

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377 Devenish 1995 *TSAR* 448; Woolman 1994 *SAJHR* 63; Cachalia *et al* 107.

378 Devenish 1995 *TSAR* 448.

379 *R v Oakes supra.*

380 See Devernish 1995 *TSAR* 448.

381 *Supra.*

382 Devenish 1995 *TSAR* 448.

6.3 Freedom of speech

The question arises whether product liability on a no-fault or strict liability basis, infringes upon the right of free speech and expression.

6.3.1 United States

The possibility of such an infringement is discussed by American commentators with regard to publisher's liability in American law.[383] If liability without proof of fault were to be imposed on the publishers and authors of books, free discussion of activities which could cause physical injury would be stifled, thereby infringing upon authors' and publishers' right to free speech and expression of freedom of the press.[384] The Supreme Court of New York realised this possibility in a case involving claims for damages based on the contention of the plaintiff that a textbook describing experiments was an inherently defective product subjected to strict liability.[385] The plaintiff in this case was injured while doing an experiment described in the defendant publisher's textbook. The court, in rejecting the plaintiff's claim,[386] stated the following in regard to the possible infringement of First Amendment rights:

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383 Lamkin 1994 *ELJ* 731-770; Whittaker 1989 *LOR* 125-139. See ch 5 part I par 6 *supra*.

384 Whittaker 1989 *LQR* 134.

385 *Walter v Bauer* (1981) Sup 439 NYS 2d 821 App Div, (1982) 451 NYS 2d 533.

386 Another reason for the rejection of the plaintiff's claim was the court's finding that the book in question could not be regarded as a defective product because the plaintiff was not injured by the use of the product for which it was designed, namely to be **read**: (1981) Sup 439 NYS 2d 823. See also ch 5 part I par B 3.3 *infra*.

> More importantly perhaps, the danger of plaintiff's proposed theory is the chilling effect it would have on the First Amendment to the Constitution-Freedoms of Speech and Press. Would any author wish to be exposed to liability for writing on a topic which might result in physical injury? e.g. How to cut trees; How to keep bees?[387]

In the First Amendment[388] to the United States Constitution the right of citizens to free speech is protected against the federal government.[389] The right to freedom of expression is regarded as the most important fundamental right in the United States.[390] First Amendment rights can only be violated by the government and it is therefore impossible to violate speech freedoms between private individuals.[391] There is no prohibition on private acts and a private party can control or censor expressions since that is regarded as editorial discretion.[392] If a tort is committed though, constitutional rights are relevant since the imposition of civil penalties is a function of court which is a branch of government. However, a plaintiff will have to

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387 (1981) Sup 439 NYS 2d 821 822-823. See also the following decisions in which it was held that First Amendment concerns outweighed the plaintiff's claim: *Olivia N. v National Broadcasting Co* (1977) 141 Cal Rptr 511 (Ct App), (1978) 435 US 1000; *Cibenko v Worth Publishers Inc* (1981) 510 F Supp 761 (DNJ); *Walt Disney Prods Inc v Shannon* (1981) 276 SE 2d 580 (Ga).

388 The First Amendment states:

> Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peacebly to assemble, and to petition the Government for a redress of grievances.

389 Cavazos and Morin 74.

390 "Freedom of thought and speech is the matrix, the indispensable condition, of nearly every other form of freedom." *per* Cardozo J in *Palko v State of Connecticut* (1937) 302 US 319, 326-327 as quoted by Van Schalkwyk J in *Mandela v Falati* 1994 4 BCLR 1 (W) 7F. See also Devenish 1995 *TSAR* 445; Carpenter 1995 *Codicillus* 28.

391 Cavazos and Morin 75.

392 *Ibid.*

show that the speech involved unprotected material as there are different categories of speech, some of which do not warrant full First Amendment protection, such as commercial speech[393] and some of which are not entitled to any First Amendment protection at all, such as child pornography.[394] In the case of protected speech, the "clear and present danger" or "compelling state interest" test is used to determine whether First Amendment rights should be upheld.[395] According to these tests, speech which advocates illegal or violent action is not constitutionally protected if it is directed to incite or produce imminent lawless action and it is likely to incite or produce such action.[396]

Because of the analogy between ES's and informative books and manuals, especially "how to" books,[397] the question arises whether the imposition of strict liability for damage caused by the use of a defective ES would constitute a First Amendment infringement. However, according to Lamkin,[398] the information contained and assembled in an ES is comparable to that of the report found to be inaccurate in the case of *South Carolina State Ports Authority v Booz-Allen & Hamilton, Inc.*[399] In this case the plaintiff had commissioned the defendant to invesigate the merits of various ports in the USA and to base its findings in a report. It subsequently transpired that the report was incorrect and the plaintiff instituted a claim for damages against the defendant based on the alleged negligent preparation of the report which

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393 Lamkin 1994 *ELJ* 765. Commercial speech is defined as speech of any form that advertises a product or service for profit or for business purposes: Devenish 1995 *TSAR* 456.

394 Cavazos and Morin 75; Devenish 1995 *TSAR* 447.

395 *Brandenburg v Ohio* (1969) 395 US 444.

396 *Ibid.*

397 Lamkin 1994 *ELJ* 757; see also ch 3 par 2.6.1.1 *supra*.

398 1994 *ELJ* 765. See also ch 5 part I par B par 3.3 *supra*.

399 (1987) 676 F Supp 346 (DDC). See also ch 5 part I par *supra*.

caused the plaintiff economic injury.[400] The defendant's argument that the First Amendment protected it from liability was rejected by the court because the report contained "objective factual data" which is not constitutionally protected.[401] In the same way, Lamkin[402] argues, does the special nature of an ES render First Amendment concerns unwarranted.[403] The data compiled in the knowledge base of an ES consists of objectively verifiable facts, drawn from the corpus of the relevant field of knowledge to the ES.[404] Such data is even more objective than that compiled by the defendants in the *South Carolina* decision.[405]

6.3.2 South Africa

Both in terms of the interim[406] as well as the final Constitution,[407] freedom of speech and expression is entrenched in the Bill of Rights. It is, however, not an absolute right and can be limited[408] in terms of the limitations clause.[409] The extent of the protection depends on the context in which it is exercised and in this regard the previous limitation provision[410] clearly distinguished between two categories of speech: political speech which was given a higher priority and non-

400 *Supra* 346-347.

401 *Supra* 349.

402 1994 *ELJ* 766.

403 See also ch 5 part I par B 3.3 *infra*.

404 See ch 2 par 8.1.2 *supra*.

405 *Supra*.

406 S 15 of Act 200 of 1993.

407 S 16 of Act 108 of 1996.

408 *Kauesa v Minister of Home Affairs* 1994 BCLR 1 (NmH).

409 Ss 33 (1) and (2) of the interim Constitution and ss 36 (1) and (2) of the final Constitution: see par 6.2.2 *supra*.

410 S 33 (1)(b)(bb) of Act 200 of 1993: see par 6.2.2 *supra*.

political speech relating to artistic and scientific endeavour.[411] The new limitations clause does not draw the same distinction between the political and non-political context of fundamental rights; all rights may only be limited to the extent that it is reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom and taking into account all the relevant factors stipulated in paragraphs (a) to (e) of section 36(1) of Act 108 of 1996.[412]

In coming to a decision, competing interests will have to be balanced.[413] Because there are no hierarchy of values, rights of free expression will have to be weighed against many other claims such as the right to equality,[414] dignity,[415] privacy,[416] fair trial,[417] economic activity,[418] and property[419].

It is my submission that the enactment of strict liability principles for ES software products as proposed,[420] will not constitute an infringement of the producers' right to freedom of speech and expression, as the latter is simply not applicable to the objective factual information contained in an ES. Furthermore, if it should be found by a court that such products do contain constitutionally protected information, it is

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411 Cachalia *et al* 50; Devenish 1995 *TSAR* 447.

412 See par 6.2.2 *supra*.

413 Woolman 1994 *SAJHR* 76; Marcus 1990 *SAJHR* 140.

414 S 9 of Act 108 of 1996.

415 S 10.

416 S 14.

417 S 35 (3).

418 S 22.

419 S 25.

420 See ch 7 *infra*.

my submission that in applying the second leg of the limitation test referred to above,[421] strict liability legislation constitutes a reasonable and necessary infringement based on the overriding interest of consumer protectionism in this regard.[422] Consumers in South Africa are very vulnerable to exploitation because of illiteracy, ignorance and other socio-economic factors.[423]

6.4 Class actions

6.4.1 Introduction

Class actions and public interest actions enable individuals and organizations to institute actions in the public interest or on behalf of others who, for various reasons, are not able to enforce their rights themselves.[424] The South African law commission (SALC) made an enquiry into the recognition of a class action in South African law, and concluded that legislation should be promulgated to provide for the institution of class actions.[425] Although the commission distinguishes between a class action and a public interest action, only the class action is relevant for purposes of this study.[426] A class action is brought by a representative on behalf of a class

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421 Par 6.2.2 .

422 See also the world-wide access-to-justice movement which supports the notion of strict liability measures as a method of achieving its objectives: par 3.2.1 *supra*.

423 See also Devenish 1995 *TSAR* 456.

424 The main reasons being that unsophisticated people do not have the understanding or the legal and economic assistance to enforce their rights and sophisticated people do not enforce their claims because such claims do not warrant the high legal costs: SALC Project 57 at 2.

425 SALC Project 88 at 35. Such an action would also conform to the worldwide "access to justice " movement: SALC Project 88 at 1. See also ch 4 par 3.2.1 *infra*.

426 A public interest action differs from a class action in that the public interest litigant does not represent any particular individual but acts in the interest of the public at large or a segment thereof.

or persons with a common interest in the action. Such an action can be very relevant in the case of harm caused to consumers by a defective ES which was mass produced and distributed to the public.[427]

The predecessor of the modern class action, the representative action, originated in English law from where it was received into other Anglo-American legal systems.[428] It became highly developed in the law of the United States but never became part of South African law.[429] The *actiones populares* of Roman law became obsolete in Roman Dutch law[430] but was revived in the interim Constitution of South Africa[431] which formally introduced class actions into South African law.[432] The final Constitution[433] provides as follows:

> Anyone listed in this section has the right to approach a competent court, alleging that a right in the Bill of Rights has been infringed or threatened, and the court may grant appropriate relief, including a declaration of rights. The persons who may approach a court are -
>
> (a) anyone acting in their own interest;
>
> (b) anyone acting on behalf of another person who cannot act in their own name;
>
> (c) anyone acting as a member of, or in the interest of, a group or a class of persons;
>
> (d) anyone acting in the public interest; and
>
> (e) an association acting in the interest of its members.

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427 See par 3.7.2 *infra*.

428 SALC Project 88 at 6.

429 *Ibid*.

430 *Bagnall v Colonial Government* 24 SC 470; *Dalrymple v Colonial Treasurer* 1910 TS 372. The only one of the *actiones populares* still surviving in our law is the *actio de libero homine exhibendo*: *Wood and others v Ondangwa Tribal Authority* 1975 2 SA 294 (A).

431 Act 200 of 1993.

432 S 7(4).

433 Act 108 of 1996 s38.

The effect of this provision is that class and public interest actions to enforce fundamental rights are introduced into South African law. However, to achieve access to justice for all South Africans, such actions also need to be introduced into other areas of the law by way of legislation.[434] A precedent for the creation of a statutory right of action already exists in private law, namely that of the shareholder's derivative action.[435]

In terms of the traditional South African law of standing, a litigant has *locus standi* in an action only when he/she possesses a personal, sufficient and direct interest in the subject matter of the action.[436] In November 1995 the SALC published a working paper inviting comment on the recognition of a class action in South African law.[437] It was recommended that an Act of Parliament be drafted to provide for class and public interest actions.[438] A class action must be brought or defended by a representative on behalf of a class of persons with a common interest in the action. It is not necessary for the representative to have a claim or defence that is typical of all the claims or defences of all class members.[439] Judgement of the court in respect of a class action shall be binding (*res judicata*) on all members of the class.

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434 SALC Project 88 at 30.

435 S 266 of the Companies Act 61 of 1973 enables a minority shareholder to institute action on behalf of the company against directors or officers of the company whose wrongful conduct or breach of trust has caused the company to suffer damages.

436 *Nasionale Party Suidwes-Afrika v Konstitusionele Raad* 1987 3 SA 544 (SWA); *Standard General Ins Co v Gutman NO* 1981 2 SA 426 (C); *Christian League of Southern Africa v Rall* 1981 2 SA 821 (O); *South African Optometric Association v Frames Distributors (Pty) Ltd t/a Frames Unlimited* 1985 3 SA 100 (O); *Ahmadiyya Anjuman Ishaati-Islam Lahore (SA) v Muslim Judicial Council (Cape) and others* 1983 4 SA 855 (C).

437 Project 88.

438 The *Public Interest Actions and Class Actions Act*: SALC Project 88 at 41.

439 The concept of an "ideological plaintiff" therefore applies to all types of class actions: see SALC Project 88 at 4. Such a plaintiff is often an organisation formed to promote certain interests, for example a consumer society.

6.4.2 Application to expert systems

According to the SALC, an example of a class action would be a monetary claim in delict against the manufacturer of a defective product.[440] It is therefore quite possible that claims for damages based on multiple copies of a defective ES which was widely distributed to the public, may be instituted against the producers of the ES if a fundamental right, such as the right to personal integrity or freedom of speech has been infringed.[441]

440 SALC Project 88 at 5 and 35.

441 See par 6.4.1 *supra*.

CHAPTER 5

A COMPARATIVE LAW STUDY: DELICTUAL LIABILITY ARISING FROM THE USE OF EXPERT SYSTEMS

INTRODUCTION

A comparative law study can be undertaken for various reasons.[1] One of the main reasons is to gather knowledge of the manner in which a particular problem is solved by the rules of other legal systems in order to find a solution in one's own national system for the same problem. The incidence of computer use has burgeoned phenomenally during the past few years and together with the infinite possibilities of cyberspace in every home and office, the information age is sweeping away traditional methods and ways of getting things done. ES applications are changing the customary manner in which services, including sophisticated professional services, are rendered. In essence, ES's embody expert or professional advice or techniques in the form of a consumer-product which is available on the mass-market, freely and unchecked. The potential for harm is great, especially since many ES applications are used in safety-related products and in domains with high risk of injury such as medical services and air traffic-control.[2] Civil liability incurred through harm caused by the use of ES's has already been noted and commented on extensively in Anglo-American computer- and information technology law.[3] Apart from the fact that the South African legal system does not yet recognise "computer- and information technology law" as a substantive discipline in our law, the issue of ES liability has not surfaced in any South African court proceedings or legal writing thus

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1 Van Zyl 17; Zweigert and Kötz (1) 17.

2 See ch 2 par 4 *supra*.

3 See ch 1 par 1.3 *supra* and pars A 2 and B 2 *infra*.

far. As stated earlier,[4] the delictual liability that may be incurred warrant particular attention and form the focus of the comparative law study offered in this thesis.[5]

The applied method of comparative law advises on the most appropriate way in which a specific problem can be solved under ruling social and economic circumstances.[6] During this investigation of other systems the relation between law and sociology of law must, however, be kept in mind. The latter identifies the various factors **other than law** which control human behaviour. In this respect, American law relating to product liability is a good example of the solution of a problem through the adoption of legal principles developed as a result of socio-legal factors such as the jury system and its power to grant punitive damages, remuneration of lawyers on a contingency basis, and America's notorious litigious society with a "quest for deep pockets".[7] The result was the development of strict liability principles for the compensation of harm caused by defective products. It is no wonder that such a vast amount of American legal literature exists on the subject of software liability in general and flowing therefrom, ES liability.[8]

The fear that the adoption of a strict products liability regime by Europe would result in a comparable high incidence of products liability claims as occurring in the United

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4 See ch 1 par 1.4 *supra*. A comparative study of contractual liabilities was limited to the Anglo-American treatment of exemption clauses and the distinction between licensing and acquisition contracts: ch 3 par 2 *supra*.

5 Parts I, II and III *infra*.

6 Zweigert and Kötz (1) 11-12.

7 Thus, a true picture of the American law regarding strict liability of the manufacturer cannot be given only through listing the elements of a successful claim at law. It must also be said that the claim will be decided in a trial by jury, and the roles the judge, lawyers, and jury play in such proceedings need to be shown, as well as their influence on the substantive law, by noting, for example, that in such a claim the plaintiff's attorney normally stipulates for a fee of 30-50 percent of the damages awarded and that the jury takes account of this fact when fixing the damages: Zweigert and Kötz (1) 5.

8 See part I par A 1.2 *infra*.

States, are unfounded when regard is had to the same external conditions discussed above.[9] It must be remembered that products liability actions in the United States also serve as a substitute for a less developed network of social insurance systems than is found in for example, Germany and the Netherlands. Unlike many European countries such as the latter, injuries from defective products which entail huge medical costs, loss of future income and even permanent disabilities, frequently remain without redress in the United States.[10] In contrast, the German and Dutch systems of health and accident insurance more than adequately cover this type of damage, obviating the need for legal proceedings.[11] Another factor is the financial risk which, in Germany, is considerable in relation to the United States, due to the possibility in a German court of having a cost order granted against the unsuccessful plaintiff for all litigation fees incurred, whereas in the United States, parties carry their own costs.[12]

For purposes of private law the most important western "legal families" are the Anglo-American, the Germanic and the Romanistic law families.[13] The latter two systems are designated as Continental systems and from them the German legal system was chosen because it is the leading system of that family in the area under discussion and the Dutch system for its similarity to the South African law of delict. Both of them are systems in which the development of computer law is quite advanced. From the Anglo-American systems the law of the United Kingdom and the United States will be scrutinized.

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9 Zekoll 1989 *AJCL* 817 *et seq.*

10 Zekoll 1989 *ACJL* 817.

11 Even the social insurance carriers, acting on assigned claims, are reluctant to litigate because of the high cost involved: Zekoll 1989 *AJCL* 817.

12 *Ibid.* Compare in this regard the SA situation in which plaintiffs are seriously hampered by the high cost of litigation without the benefit of compulsory social insurance schemes.

13 Zweigert and Kötz 66.

Any discussion involving product liability would be incomplete without the treatment of European Union law because of the influence of the Directive on the Liability for Defective Products on EU member states. In light of the fact that England, Germany and the Netherlands are members of the European Union, the influence is obvious.

In order to come to a sensible conclusion in respect of the presumed treatment of ES tortious liabilities in any of the legal systems under discussion, it is necessary to view the principles of their tort law in general before applying them to situations where damage is caused through the use of ES's as defined in this study. Therefore, each of the foreign systems treated contain a discussion of the applicable delictual liability regime whereafter it is applied to the situation of ES liability as defined in the problem statement. Finally, a summary is made of the comparative study as a whole, from which certain conclusions and recommendations of use to the South African treatment of ES delictual liability can be drawn.

It must be emphasized that, because no pertinent decision which specifically concerns the issue of delictual liability incurred through the use of ES's have been noted so far in any of the foreign jurisdictions treated, the eventual conclusions and applications remain presumed and conditional on the understanding and interpretation of the foreign principles involved.

PART I : COMMON LAW COUNTRIES

A. United Kingdom

1. Introduction

1.1 Tortious liability

1.1.1 General

English law consists of **written** and **unwritten** law of which legislation and judicial precedent (case law) respectively form the principal sources.[14] Parliament is sovereign with unlimited legislative powers that have to be applied by the courts.[15] Since joining the European Union (EU), the United Kingdom has become subject to European Treaties and EU legislation.[16] Case law is regarded as precedent and courts' decisions are binding upon each other according to a hierarchical structure[17] in terms of which the **House of Lords** is the highest court in the land and the only court permitted to depart from a prior ruling of its own "when it appears right to do so".[18] The decisions of the House of Lords are absolutely binding upon all other

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14 James 6.

15 *Ibid.*

16 European Communities Act of 1972: James 15; Steiner 22. See also part II *infra*.

17 The reliance upon precedence is the hallmark and strength of a common law system: James 16.

18 The House of Lords used to treat its own decisions as binding upon itself until the Lord Chancellor announced otherwise in 1966: see James 18 *et seq*. The decision of *Caparo Industries plc v Dickman* [1990] 2 AC 1 605; [1990] 1 All ER 568 regarding the effect of negligent misrepresentation in cases of pure economic loss illustrates this power of the House of Lords to overrule its own previous decision: see par 2.5 *infra*.

courts whether these decisions appear to be correct or not.[19]

The law of torts is founded in common law and has been expanded by the courts according to the needs of society.[20] This expansion will continue to occur limited only by the practical consideration that all injuries complained of cannot be regarded as legal wrongs.[21] A tort is a civil wrong entitling an injured party to claim damages for loss sustained.[22] Torts consist of the infliction of legally recognised injuries which have become subject to specific legal definitions and which are actionable only within the limitations of special rules applicable to each of them.[23] However, Fleming[24] points out that the body of English liability rules establishing specific injuries within which a plaintiff's claim must fall in order to found a cause of action, is not so rigid that a plaintiff is denied an action merely because the special circumstances do not comply with the rules of any existing tort; new torts can be created when policy dictates the need to recognise a new cause of action.[25] The English tort system as a system of compensation has not escaped criticism,[26] mainly because it is too expensive, and unfairly discriminates between victims of the same injury, as compensation hinges on the culpability of the defendant. By 1978, the British

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19 James 17.

20 Delictual liability is known as "tortious liability" in Anglo-American law. "Tort" derives from *tortus* which means "twisted" or "crooked" and is used in English as a synonym for "wrong": Fleming (2) 1.

21 A tort does not consist simply of the infliction of an injury, but of the infliction of a **legally recognised injury**: James 369.

22 James 366; Fleming (2) 1.

23 James 369.

24 (2) 5.

25 The tort of negligence has expounded to accommodate new causes of action, for example the admission of liability for negligent misrepresentation and pure economic loss: *Hedley Byrne v Heller* [1964] AC 465. See also James 380.

26 Fleming(2) 14. See also the criticism on the American tort system: par B 1.1.1 *infra*.

Pearson Commission had recommended that social insurance benefits be increased to reduce the incentive for tort claims.[27] The steadily increasing ground of **strict liability** shows a trend towards applying an **economic efficiency policy** in tort, whereby the costs of compensation are internalised rather than the traditional **corrective justice policy** whereby an obligation is placed on the wrongdoer.[28]

1.1.2 Forms of liability

Torts can be divided into three categories according to the three grounds upon which liability may be based:[29]

(a) intentional interference with the plaintiff's interests;

(b) negligence; and

(c) strict liability.

The first category of torts is not relevant to this study.[30] The category **negligence** constitutes by far the largest part of tort law and develops most rapidly as new "duties of care" are created.[31] Strict liability is applied to abnormally dangerous activities, introduced by legislation in spheres such as aviation, work and road accidents, and products liability.[32]

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27 Fleming(2) 14. This phenomenon is also occurring in other countries, eg Germany, the Netherlands: Zweigert and Kötz 342 *et seq*. See also part III par A 1.1.1 and B 1.1.1 *infra*.

28 Fleming (2) 329; Zweigert and Kötz(2) 374 *et seq*.

29 Fleming (2) 15.

30 See ch 1 par 1.4 *supra*.

31 Tapper 245; James 380; Fleming (2) 102.

32 Fleming(2) 327 *et seq*.

1.1.3 Joint tortfeasors

In terms of the common law a distinction is made between joint and several tortfeasors.[33] The former denotes the position where more than one wrongdoer have a common enterprise in causing the same damage, and the latter where the same damage is caused but without any common design.[34] Joint tortfeasors are collectively responsible for the tort committed, in other words they are jointly and severally liable for the damage they caused,[35] whereas several tortfeasors are only individually liable for the damage each of them caused.[36] Contribution is possible between joint and several tortfeasors.[37]

1.2 Software liability

As software liability issues based on tort have not yet been the subject of a specific decision by the courts, computer law writers draw analogies from cases in which issues of liability of a similar nature to that of the liability of software users and producers, have been decided.[38] Computer law writers concur that the most likely causes of action in the case of software liability incurred by producers and users will be based on **negligence,**[39] in that a duty of care may have been breached, and

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33 Fleming(2) 255.

34 *Ibid.*

35 *Ibid.*

36 *Ibid.*

37 See the Civil Liability (Contribution) Act of 1978.

38 Reed 1987 *CL&P* 12 and 1988 *CL&P* 149; Tapper 245 *et seq*; Singleton 1994 *CL&P* 170; Davies 1993 *CL&P* 99.

39 The treatment of liability arising from intentional conduct is, in any event, excluded from the scope of this study: ch 1 par 1.4 *supra*.

strict liability in the form of **product liability** and **vicarious liability**.[40] The latter form of liability is specifically pertinent to the situation of a software developer who employs producers to design and develop software.[41] Liability based on negligence and products liability hinge upon the question whether software is a **product** or a **service**.[42] In English law, the latter question depends on whether software consists of "goods" within the meaning of a "product" as defined in common law[43] and the CPA.[44] In this respect the tangibility of the product, the nature of the commercial transaction that took place and the substance of the contract, are determinant factors.[45] In the case of software being a product, strict liability principles may apply, whereas if the software is regarded as a service, negligence liability principles will be appropriate.[46]

Another argument specifically applicable to possible tortious liability, contends that products consisting of information, which cause harm through the use of the information, should not be subjected to products liability, as the harm is caused by the use of the information in the text, and not by the text (and therefore the product) itself. For example, where injury is suffered as a result of contact with poisonous ink, it is not the use of the information in the text in the book that causes the harm, but

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40 See Tapper 245 and 255; Reed 1988 *CL&P* 149; Bott *et al* 232; Reed 1978 *CL&P* 12; 1993 *CL&P* 99; Singleton 1994 *CL&P* 167.

41 See par 3.1 *infra*.

42 *Ibid*.

43 In terms of the common law, manufacturer's liability was progressively applied to many commodities, including natural and manufactured products which are not reasonably safe to life, health or property: Fleming(2) 483.

44 Sec 2(1).

45 See ch 3 par 2.6.1.1 *supra*.

46 See ch 3 par 2.6.1.1 *supra* and the authorities cited there in fn 210.

the printed text itself.[47] It is accordingly suggested that the software and its physical medium (where it is so supplied) should be considered together as a unit, and regarded as physical property.[48] Where software is provided without a physical medium, for example in the case of electronically transferred software, it is not regarded as a product but rather as "pure information" which does not fall within the meaning of a product and should be regarded as a service.[49] However, this view is not accepted by the majority of English computer law commentators,[50] and neither, so it seems, by the courts.[51]

In conclusion it can be stated that software in general and ES's in particular, will be regarded as products if they are sold on a physical medium in the form of standard or package software. Custom software and software installed directly in the user's computer system will more likely be regarded as a service.

2. Negligence

2.1 Introduction

The tort of negligence lies in the breach of a legal duty to take care not to injure the

47 Eg the poisonous ink in the monk's manuscript of *The name of the rose*, a novel by Umberto Eco published in London 1980.

48 Triaille 1993 *CLSR* 219.

49 Reed(2) 43. This view concurs with the view of European law commentators who distinguish between software as a product and instructive information, which is not a product: see ch 5 part II par 9.1.3 *infra*.

50 *Cf* Tapper 181; Reed(2) 43; Capper and Susskind 120. See also ch 3 par 2.6.1.1 *supra*.

51 *St Alban's DC v ICL* (unreported): Colbey 1996 SJ 1025. See also *Cox v Riley* (1986) 83 Cr App R 54; *Eurodynamic Systems plc v General Automation Ltd* unreported 6 September 1988 (QBD). See ch 3 par 2.6.1.1 *supra*.

plaintiff.[52] The three requirements that have to be satisfied before negligence is established are:[53]

(a) The defendant must owe a **duty of care** to the plaintiff;

(b) the defendant must be in **breach** of that duty; and

(c) the plaintiff must have suffered **damages** as a consequence of the breach.

Included in the third requirement (c), is also the requirement of **causation** as the damages must have been **caused** by the breach the duty.[54]

2.2 Requirements

2.2.1 Duty of care

It is commonly accepted that the test for the existence of a duty to take care lies in the seminal case of *Donoghue v Stevenson*[55] as propounded by Lord Atkin in his famous speech creating the "neighbour test:"[56]

> You must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbour. Who, then, in law is my neighbour? The answer seems to be persons who are so close and directly affected by my act that I ought reasonably to have them in contemplation as being so affected when I am directing my mind to the acts or omissions which are called in question.

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52 Fleming (2) 103; James 380.

53 *Ibid.*

54 See also the requirements for a delict in terms of SA law: ch 3 par 3 *supra*.

55 [1932] AC 562.

56 *Supra* 580.

According to this test, liability for negligence is based on harm occurring in circumstances where there is such a close and direct relationship between the parties that the harm ought reasonably to have been foreseen.[57] Even though these two factors of foresight and proximity may have been established, a claim may still be denied on the ground of policy considerations.[58] In the case of physical and property damage the existence of a nexus between the careless defendant and the injured plaintiff is found in the very fact that such an injury has occurred.[59] In contrast to damage consisting of physical injury or damage to property, **pure economic loss**[60] does not easily lead the courts to recognise a sufficiently proximate relationship to give rise to such a duty to take care.[61]

2.2.1.1 Duty of care of the producers of software

The producers of software, therefore, have a clear duty to take care to design and produce software that will not physically injure the user or another person,[62] or

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57 *Home Office v Dorset Yacht Co Ltd* [1970] AC 1004; *Hill v Chief Constable* [1988] 1 All ER 238; [1989] AC 53. On the duty of care, see in general James 380-385; Fleming (2) 135-185.

58 *Rondel v Worsley* [1969] 1 AC 191; *Hill v Chief Constable supra.*

59 Lord Bingham explains it as follows in the *Caparo* decision *supra* 808: "It is enough that the plaintiff chances to be (out of the whole world) the person with whom the defendant collided or who purchased the offending ginger beer."

60 "Pure economic loss" refers to financial loss not linked to the physical harm of the plaintiff or the plaintiff's property: Fleming (2) 173; Neethling *et al* 280 *et seq*; Midgley(1) 30.

61 From earliest times personal security and tangible property have been protected whereas economic loss has only relatively lately been regarded as an interest worthy of protection: Fleming (2) 173. See also par 2.5 *infra*.

62 Even where physical harm results from reliance by a third party on negligent information, the courts have had no difficulty in imposing liability: *Clay v Crump* [1964] 1 QB 533; *Driver v Willet* [1969] 1 All ER 665; *Watson v Buckley* [1940] 1 All ER 174. See also par 2.5 *infra*.

damage the user's or another person's property.[63] In this respect a claim based on negligence with regard to damage caused by software (including ES's) may be instituted.[64] However, liability becomes more problematic when **pure economic loss** is caused, a situation which is much more likely to occur when ES's which have an intellectual output, such as a tax advisory system, are used.[65] As there are no established duties of care with regard to the use of ES's yet, an analogy can be drawn between information produced by an ES and situations where information is supplied by a person or through a medium such as a publication.[66] In this way the results produced by software are very similar to statements of fact which may be acted upon by the users.[67] It may therefore be assumed that the courts will have regard to considerations found in **negligent misstatement** cases when the extent of the duty of care owed by the software producers to the user is determined.[68]

2.2.1.2 Duty of care of the users of software

In the same way the user of software has a duty to take care that the use of the software does not harm another person.[69] If the plaintiff's loss is caused by the negligent operation or use of the computer system, the system will be regarded as merely the means by which the function is performed, and the question will be whether sufficient care was taken by the human in performing the function.[70]

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63 Reed (2) 75. The fact that the injury may be caused by acts or words, as in the case of misstatements, makes no difference: Fleming (2) 175.

64 Reed (2) *ibid.*

65 Reed (2) 76; Tapper 250.

66 *Ibid.*

67 See ch 2 par 10.1.2 *supra*.

68 Reed (2) 78; Tapper 264. See par 2.5 *infra*.

69 Reed (2) 76.

70 Reed (2) 81.

According to Reed,[71] the courts will more easily find a duty to take care in operating a computer system than in designing such a system because of the small class of plaintiffs that exists in the first instance. A negligently operated ES may cause loss to a few clients, but a negligently designed ES may cause loss to all the users.[72] If the user of the system knew or ought to have known that the ES was defective in design or operation, she would be negligent in relying on such a system. Where a computer system is under the defendant's control, incorrect results may suggest that the defendant acted negligently.[73] A defendant will also be negligent if it is shown that, although the output is accurate, there is insufficient justification to rely on the computer system alone. In this regard problems will often arise when professionals give advice which is solely based on information from computer systems.[74] If it transpires that such advice is incorrect, the professional will definitely be liable in negligence.[75] Regarding the duties of care of the users of ES's, reference can be made to instances involving the introduction and application of **new technology** in the execution of tasks.[76] In the decision of *The Lady Gwendolen*,[77] the master of a ship laden with cargo sailed at full speed in the face of dense fog. Although the ship was fitted with radar, which at that time represented new technology, the master only looked at it occasionally and for most of the time it was set at the wrong range. The court found that the new technological aid was used negligently and refused to limit the owners' liability in terms of the Merchant Shipping Act of 1984 because they

71 *Ibid.*

72 Reed (2) 82.

73 Reed (2) 83 states that these circumstances may be such a strong indication that the work was done negligently, that the doctrine of *res ipsa loquitur* should come into operation: see par 2.3 *infra*.

74 See par 2.7 *infra* with regard to professional liability in the context of ES liabilities.

75 Reed (2) 85.

76 Tapper 246 *et seq*.

77 [1965] P 294 .

had neglected their duty to instruct and train their workers in its use.[78]

2.2.2 Breach of duty

Once the existence of a duty of care has been established, the question arises as to whether that duty has been breached.[79] A duty of care is breached when the defendant has failed to take reasonable care in avoiding injury to the plaintiff. **Reasonable care** varies according to the nature of the risk involved and can therefore only be determined in the light of all the facts and circumstances of the case.[80] The standard of care is measured by the **reasonable person** placed in the same circumstances as the defendant.[81] The foreseeability of the risk of harm as well as the question whether the defendant conformed to common practice in the circumstances, play a definite role in determining whether a breach of duty occurred.[82] Safety codes are viewed as persuasive evidence of expert opinion as to minimum safety requirements with the result that non-compliance constitutes evidence of negligence.[83] In this respect the use of product standards such as the ISO 9000 series,[84] can play an important role in the determination of product safety.[85] Consequently, certification by a recognised authority that a product, such as software, was produced according to a defined quality control system such as the

78 *Supra* 296.

79 On breach of duty, see in general James 385-387; Fleming (2) 105-134.

80 *Overseas Tankship (UK) Ltd v Miller SS Co Pty Ltd (The Wagon Mound (No 2))* [1967] AC 617.

81 The same test is used as in SA delict law: see ch 3 par 3.3.3.2 *supra*.

82 Fleming(2) 119 *et seq*; Hodges *et al* 234-235.

83 Fleming(2) 121. See also par 2.7 *infra* with regard to the effect of safety standards on professional liability.

84 See ch 6 par 5.2.2.2 *infra* for a more detailed discussion of the ISO series standards.

85 Hodges *et al* 397 *et seq*.

ISO series, is an indication that reasonable care has been taken by the producer to avoid injury to the users.[86]

Non-compliance with binding statutory standards is regarded as negligence *per se* as in such a case the appropriate standard of conduct is prescribed by law.[87] According to Fleming,[88] the effect of the doctrine of statutory negligence is the promotion of strict liability because of the "absolute duty to comply" with the stated standards.[89]

After a duty of care has been established by the production and use of an ES, it must be ascertained whether a breach of that duty has occurred in the event of damage caused by the use of ES's.

2.2.3 Damage

Actual damage is a necessary element of the tort of negligence and no cause of action accrues until such damage has occurred.[90] The qualification of damage is determined by policy rules mostly defined by the various "duties of care" established from time to time. It includes physical and mental injury, property damage and pure economic loss in some instances.[91] Special and general damages are awarded to

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86 Hodges *et al* 405. On the role of product standards and quality assurance systems in the foreign systems investigated, see par B 2.2.2.3 *infra*, part II par 9.2.1 *infra*, part III pars A 5.5.2 and B 3.3.3 *infra*.

87 This is also referred to as statutory negligence: *David v Britannic Merthyr Coal Co* [1909] 2 KB 146 164. See Fleming (2) 124.

88 At 133.

89 *Cf* Fleming(2) 130-134.

90 James 388; Fleming(2) 191.

91 *Ibid.* With regard to the duty to a duty of care in the case of causing pure economic loss, see Fleming(2) 177 *et seq*. See also par 2.5 *infra*.

compensate loss sustained.[92] An indemnity principle is followed with exemplary or punitive damages rarely, if at all, awarded.[93] Special damages refer to pecuniary loss capable of precise quantification such as medical and other expenses as well as loss of earnings up to date of trial.[94] General damages refer to non-pecuniary loss of the past and future, such as pain and suffering, loss of amenities, etcetera as well as loss of future earnings.[95] Financial limits or fixed ceilings (caps) or thresholds for damages do not exist in English tort law.[96] Liability for death and personal injury cannot be excluded or limited by contract,[97] but any other loss or damage may be excluded or limited to the extent that it is reasonable.[98]

2.2.4 Causation

The damage must have been caused by the breach of duty.[99] Causation deals with two inquiries namely that of factual causation or cause-in-fact and legal or proximate causation. The first inquiry deals with the question of whether the defendant's culpable conduct was causally relevant to the injury sustained for which the well-

92 Fleming(2) 228.

93 *Ibid.* Punitive damages are only awarded against defendants who have acted in a particularly wanton and deliberate manner: see Fleming(2) 242.

94 Fleming(2) 229-238.

95 *Ibid.*

96 Such limitations have been instituted in Australia: Fleming(2) 239-240. Even under the strict products liability regime in terms of the CPA, the UK has not imposed a maximum limit of liability as it is entitled to do according to the discretion allowed by the EU Directive on product liability in Art 7(e): see par 3.2 *infra*.

97 S 2(1) UCTA.

98 S 2(2) UCTA. See also ch 3 par 2.6.1 *supra*.

99 On causation in general, see James 387-388; Fleming (2) 192-224.

known "but for" or *conditio sine qua non*-test is used.[100] The second inquiry involves the question as to what extent the defendant should be legally responsible for the consequences of her actions and thus entails a policy decision. With regard to damage caused by the use of an ES it may be impossible to attribute the fault entirely to one party. In the case of a defective system the knowledge could have been supplied defectively by the DE, it could have been incorrectly represented by the KE and the knowledge base could have been improperly matched with the inference engine by the toolbuilder. In such a situation it will be necessary to ascertain the relative contributions of all parties for the purpose of causation as well as apportionment of the damage.[101]

2.3 Burden of proof

The plaintiff carries the burden of proof in respect of all elements or facts in issue in a tortious action: a *prima facie* case of negligence must be established against the defendant.[102] However, in situations where the cause of injury lies exclusively within the defendant's control, the doctrine of *res ipsa loquitur* (the thing speaks for itself) is invoked.[103] In these situations the facts are such that it is difficult for the plaintiff to prove negligence but the facts indicate so strongly against the defendant that the court may find in the plaintiff's favour unless the defendant can furnish some explanation to rebut the presumption of negligence. If such an explanation is given by the defendant, the plaintiff has to prove negligence.[104] In the context of product

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100 Fleming (2) 194; see also the similar position in SA law: Neethling *et al* 159; ch 3 par 3.3.4.1 *supra*.

101 Tapper 264; Fleming (2) 200-202.

102 James 388; Fleming(2) 314.

103 Eg in cases involving product liability where the manufacturer has complete control of the production process: Fleming(2) 314.

104 *Byrne v Boadle* [1836] 2 H&C 722; 159 ER 299. In this way the maxim is building a bridge between negligence and strict liability: Fleming(2) 325.

liability this doctrine is highly applicable and has resulted in quasi - strict liability.[105] According to procedural law, the maxim raises only a permissive presumption, in other words a presumption of fact which does not shift the "burden of going forward with the evidence"[106] as does a presumption of law.[107] A presumption of fact merely demonstrates the general principle of inferring a fact in issue from circumstantial evidence.[108] In practice though, the maxim was treated as a presumption of law which established a *prima facie* case for the plaintiff, resulting in a shift of the evidentiary burden raising a presumption of negligence.[109] This presumption can only be rebutted by proving that the occurrence was not due to any negligence on the part of the defendant or that all reasonable care was taken, resulting in an onerous burden of rebuttal on the part of the defendant.[110] In this way *res ipsa loquitur* becomes a device for effecting an outcome similar to strict liability.[111]

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105 See par 2.8 *infra*.

106 The term used in Anglo-American law to denote the concept of the "evidentiary burden" (*weerleggingslas*) in SA law of evidence: Schmidt 24.

107 Fleming(2) 325.

108 Fleming(2) 323.

109 The doctrine had its origin in the "wood barrel" case, *Byrne v Boadle* 2 H & C 722 159 Eng Rep 299 (Exch 1863), in which a pedestrian was injured by a barrel of flour that mysteriously hurtled down upon him from above. The plaintiff could not prove that the barrel fell due to the lack of care of the defendant, the flour company located in the building above the street where the injured plaintiff was passing: see Friedman and Siegel 1988 *Rutgers C&TLJ* 290. The court decided that the traditional guidelines of negligence law should bend in order to promote justice and did not require that the plaintiff prove the identity of the person actually responsible. The mere fact that the accident occurred established a *prima facie* case of negligence since ordinarily the event could not have occurred unless the defendant was negligent, in other words, the accident spoke for itself (*res ipsa loquitur*): *Byrne v Boadle supra* 725.

110 *Ibid.*

111 *Ibid.* See also par 2.8 *infra*.

2.4 Defences

The defences of contributory negligence and voluntary assumption of risk may be raised against a claim arising from the use of ES's.[112] The first defence refers to the plaintiff's failure to meet the standard of care applicable for her own protection and which is a legally contributing cause of her own injury.[113] In such a case the plaintiff's claim may be reduced by a "just and equitable" amount of the damages recoverable where the damage suffered was part of the plaintiff's own fault.[114]

Where a defence of voluntary assumption of risk is advanced, the plaintiff, by agreeing to assume the risk herself, absolves the defendant from all responsibility from it.[115] The former's affected right is thus waived. A person who consents to the risk of injury does not have an action in tort against the person who causes the injury: the principle of *volenti non fit iniuria* applies in English law.[116] Consent may not be given to run a risk of illegal harm, for example to bodily harm.[117] Mere knowledge of a risk does not imply consent.[118] The plaintiff must have a full comprehension and clear appreciation of the risk involved.[119]

In the context of ES liability, the question arises as to whether the plaintiff consents

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112 See ch 3 par 3.3.6 *supra*.

113 Fleming(2) 268.

114 S 1(1) of the Law Reform (Contributory Negligence) Act of 1945: see Fleming(2) 269 *et seq*.

115 Fleming(2) 291 *et seq*.

116 James 369; Fleming (2) 79 291. The principle also applies in SA law: Neethling *et al* 91; see also ch 3 par 3.3.3.4 *supra*.

117 James 370.

118 *Smith v Baker* [1891] AC 325. See also Fleming(2) 296 *et seq*.

119 Fleming(2) 100.

to the risk of injury where the ES contains a warning of the risk involved in its use.

2.5 Negligent misrepresentaion

The possibility of holding the developers of defective ES's liable in terms of a misstatement was raised because of the similarity between a computer system giving expert advice and a human doing the same.[120] After the decision in *Donoghue v Stevenson,*[121] the policy of the House of Lords was gradually to extend negligence into areas where previously no remedies existed such as in the case of misstatements causing pure economic loss.[122] This development can be traced through the watershed cases of *Hedley Byrne v Heller,*[123] *Home Office v Dorset Yacht Co Ltd*[124] and *Anns v Merton London Borough Council.*[125]

In terms of the decision in *Hedley Byrne* [126] the existence of a duty to take care when information is supplied, is limited to parties in a special relationship with the maker of the statement and in circumstances where the latter knows or should have known that the parties would rely on the statement.[127] This special relationship is found in a "sphere in which a person is so placed that others could reasonably rely

120 Tapper 251; Reed(2) 77.

121 *Supra.*

122 *Hedley Byrne v Heller supra.* In *Donoghue v Stevenson supra*, Lord Atkin introduced into English law the modern approach of defining a single general principle which may be applied in all circumstances to determine the existence of a duty of care. See also the comprehensive discussion of this aspect of English law in Pretorius 61 *et seq.*

123 *Supra.*

124 [1970] AC 1004.

125 [1978] AC 728.

126 *Supra.*

127 *Ibid.*

on his judgement or his skill or on his ability to make careful inquiry,...."[128] It can also be found where the parties are in a contractual relationship or in a relationship of proximity that is equivalent to a contract or where it is clear that the defendant professes to dispose of professional knowledge and skill.[129] The decision makes it clear that the mere fact that it was foreseeable that some person in the defendant's position might rely on the statement is not sufficient to establish a duty of care.[130] The importance of the decision is that for the first time, it was accepted by the House of Lords that a duty of care rests on a person not to cause harm through the making of a negligent misrepresentation and this duty is not limited to parties in contract. A defendant may also be liable for a negligent misrepresentation made to a third party outside a contractual relationship or a relationship of trust. The fact that pure economic loss is suffered is not *per se* a reason for denying such a claim.[131]

It seems, therefore, that according to the *Hedley Byrne* decision[132], producers and users of ES's will be liable for economic loss caused where a special relationship exists between them and the injured party, and if it is shown that they knew or should have known of the reliance of the injured party on the information provided by the ES. In the *Anns* decision[133] Lord Wilberforce formulated the well-known two-stage-test to establish a duty of care in tort:[134]

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128 Supra 502.

129 *Supra* 529-530.

130 Fleming (2) 174.

131 *Hedley Byrne v Heller supra* 517 529. *Cf* James 384; Fleming (2) 174.

132 *Supra*.

133 *Supra*.

134 751G-752B.

> First one has to ask whether, as between the alleged wrongdoer and the person who has suffered damage there is a sufficient relationship of proximity or neighbourhood such that, in the reasonable contemplation of the former, carelessness on his part may be likely to cause damage to the latter, in which case a prima facie duty of care arises. Secondly, if the first question be answered affirmatively, it is necessary to consider whether there are any considerations which ought to negative, or to reduce or limit the scope of the duty or the class of person to whom it is owed or the damages to which breach of it may give rise.....[135].

The court must first establish whether a duty of care exists, and secondly it must be determined what the scope of the duty is. The first question is answered by applying the foreseeability test, which includes the requirement of a "special" or "proximate" relationship and the second by looking at policy factors which could exclude or limit the scope of the duty. The latter has been further described as taking into account "whether it is just and reasonable" to impose such liability.[136]

Because of the fear of opening the floodgates to claims of indeterminate loss,[137] the courts have not been anxious to follow the decision in *Anns*[138] and *Junior Books*[139], and have found various reasons to distinguish them from facts in later cases.[140] A single general principle whereby a duty of care can be determined in

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135 The test was subsequently confirmed and applied in *Junior Books Ltd v Veitchi Co Ltd* [1983] AC 520; *Candlewood Navigation Corporation Ltd v Mitsui OSK Lines Ltd* [1986] AC 1. See also *Governors of the Peabody Donation Fund v Sir Lindsay Parkinson & Co Ltd* [1983] 1 AC 201 206; *Leigh and Sillavan Ltd v Aliakmon Shipping Co Ltd* [1986] 2 WLR 902; [1986] AC 785.

136 *Governors of Peabody Donation Fund v Sir Lindsay Parkinson and Co Ltd supra.*

137 This fear was first voiced by Cardozo J in *Ultramares Corp v Touche* (1931) 255 NY 170; 174 NE 441 444: see par B 2.5.2 *infra*.

138 *Supra.*

139 *Supra.*

140 *Muirhead v Industrial Tank Specialities* [1986] QB 507; *Simaan General Contracting Co v Pilkington Glass Ltd (No 2)* [1988] QB 758; *Murphy v Brentwood District Council* [1990] 3 WLR 414.

every practical situation has proved to be unattainable.[141] What has emerged though, is that, in addition to the foreseeability of damage, a relationship of proximity or neighbourhood should exist between the parties and it should be considered fair, just and reasonable to impose a duty of a certain scope on a particular party for the benefit of the other party.[142] In *Mutual Life Citizens Assurance Co Ltd v Evatt*[143] the court held that a duty of care is confined to statements made or advice given in the exercise of a profession involving the giving of such advice.[144]

The approach followed in the *Anns* decision[145] was eventually reversed by the House of Lords in the decision of *Caparo Industries plc v Dickman*.[146] In this case it was recognised that, particularly in problematic cases such as those involving the recovery of pure economic loss upon the furnishing of information, the courts will require something additional to the standard test based on reasonable foreseeability of harm, when determining the existence of a duty of care.[147] Although the court recognised the importance of the underlying general principles common to the whole field of negligence, it was of the opinion that the law had moved in the direction of attaching greater significance to the more traditional categorisation of distinct and recognisable situations to guide the existence and scope of the various duties of care

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141 *Peabody Donation Fund v Sir Lindsay Parkinson & Co Ltd* [1985] AC 210; *Yuen Kun yeu v Attorney-General of Hong Kong* [1988] AC 175; *Rowling v Takaro Properties Ltd* [1988] AC 473; *Hill v Chief Constable supra*; *Smith v Eric S Bush (a firm) and Harris v Wyre Forest DC* [1989] 2 All ER 514; [1989] 2 WLR 790.

142 *Caparo Industries plc v Dickman supra.*

143 [1971] 1 All ER 150; [1971] AC 793.

144 See also the dissenting judgement of Lord Denning in *Candler v Crane, Christmas & Co* [1951] 2 KB 164 (CA); [1951] 1 All ER 426 433-435 where he requires the advice to be given "by one whose profession it is to give advice on which others rely".

145 *Supra.*

146 *Supra.*

147 Rodger 1995 *PN* 114.

imposed.[148] The court noted with approval the following words of Brennan J in the High Court of Australia in *Sutherland Shire Council v Heyman:*[149]

> It is preferable in my view, that the law should develop novel categories of negligence incrementally and by analogy with established categories, rather than by a massive extension of a prima facie duty of care restrained only by indefinable "considerations which ought to negative, or to reduce or limit the scope of the duty or the class of person to whom it is owed.

It was held in *Caparo*[150] that the auditors of a company do not owe a duty of care to potential investors or to individual shareholders who buy further shares as no relationship of proximity between the auditor and a member of public can be deduced, because to do so would give rise to the unlimited liability of auditors. The court criticised earlier attempts to include within the meaning of proximity, any class of persons, unknown to the auditor, who may possibly use the financial statements in making investment decisions.[151] Their lordships emphasized that **knowledge** by the auditor of the intended use of the information by the plaintiff is a prerequisite for liability.[152] This knowledge on the part of the respondents need not be actual knowledge but such knowledge as would be attributed to a reasonable person placed in the respondents' position.[153] The two-stage test of *Anns*[154] is abandoned for a three-stage approach whereby it must be assessed if:

(a) there is reasonable foreseeability;

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148 At 574 *per* Lord Bridge.

149 (1985) 60 ALR 1 43-44.

150 *Supra.*

151 *Supra* 581.

152 *Supra* 589.

153 *Ibid.*

154 *Supra.*

(b) proximity; and

(c) whether it would be just, fair and reasonable to impose liability.

Underlying this three-stage approach, should be an incremental or traditional categorisation approach which means that liability will only be imposed as just, fair and reasonable if it can be placed within a **previous** category of cases in which the courts have found a duty of care.[155] The court did not attempt to resolve the question of whether the advice relied on should be restricted to advice given in the course of business or of a profession since the certifying of accounts, which was the particular task executed in this situation, was something done in the course of the ordinary business of auditors.[156]

Liability for pure economic loss arising from the use of ES's will probably only be imposed on producers of systems containing professional or business advice which have been designed and produced with the knowledge that a specific class of users will rely on such advice.[157] All other cases involving pure economic loss will have to be decided in terms of contractual obligations.[158] Application software such as an ES is specifically acquired by users to **be relied on** for a purpose, and provided it is used for its intended purpose, the producers will owe a duty of care to the users in terms of the decision in *Caparo*[159]. According to Reed[160] such a duty of care

155 See also Rodger 1995 *PN* 114.

156 *Supra* 588.

157 Examples are the users of the Self-Help System and also the professional users of the Intelligent Assistant: see ch 2 par 11 *supra*.

158 Reed (2) 77.

159 Another reason why it was held that the company's auditors owed no duty of care to the shareholders in respect of their accounts, was because the accounts were not produced to be relied on when making investments: *supra* 588.

160 Reed(2) 77.

will depend on a further proviso, namely that the software is acquired in the form of a development contract, in other words custom software,[161] and not as standard software[162] which was directly acquired over the counter. The reason for this is that standard software, available on the mass-market, is not confined to a limited class of users as would be the case with custom software specifically contracted for.[163]

In respect of the liability of authors and publishers towards their readers for negligent misrepresentations published in books, no English cases conferring liability upon authors and publishers of such books exist.[164] The idea of holding persons liable for negligent misrepresentation merely because of the publication thereof is considered abominable in English law.[165] A cause of action based on "publisher's liability" against the producer of a defective ES, similar to that available in the United States,[166] is therefore not possible.

2.6 Omissions

The question whether the failure to use a computer system might amount to a breach of duty, depends on the particular circumstances of a case. There must be a sufficient causal connection between the breach of duty and the loss incurred.[167] The question is whether the reasonable person in the position of the defendant would have used the computer system and, in so doing, avoided the loss. In deciding this

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161 See ch 2 par 10.1.1 *supra*.

162 *Ibid.*

163 *Ibid.*

164 Tapper 266; Fleming (2) 642.

165 *Candler v Crane Christmas & Co supra*; Tapper 266. *Contra* the position in the United States with regard to the "chart and map" cases: par B 2.5.3 *infra*.

166 See par B 2.5 *infra*.

167 James 387.

question, the state of the art in the particular field of application must be taken into account.[168] If for example, an ES exists which could be but is not used by a professional in the execution of her professional duties and harm is caused through this non-use, the professional will be negligent in not having used it.[169] As soon as the state of the art has advanced to the stage where a problem is recognised and solutions to it have been produced, it will be negligent not to adopt the solutions even if it is not customary to use them in that specific area.[170] In *General Cleaning Contractors Ltd v Christmas*[171] a window cleaner instituted an action for damages against his employer after he was injured when the lower sash of a window fell. The court found that the employer was indeed negligent by not installing measures to prevent such an incidence. In answer to the argument of the defence that it was not usual for the trade to take such precautions, Lord Reid said: "..... even if it were proved that it is the general practice to neglect this danger, I would hold that it ought not to be neglected and that precautions should be taken...."

Reed[172] argues that the *General Cleaning* decision[173] lends scope to a court to hold that a failure to use also includes a failure to invent or modify a computer system in order that harm may be prevented, especially when the invention or modification is simple to effect. In deciding whether a reasonable man would have made such an invention or modification the seriousness of the potential loss, the likelihood of its occurrence and the expense need to be balanced. The cases that have established this principle all concern a precaution that could have been taken which would have

168 Reed(2) 86.

169 See also par 2.7 *infra*.

170 For the position in American law, see par B 2.2.1.1 *infra* with regard to the discussion of the USA decision in *The T.J. Hooper* (1932) 60 F 2d 737.

171 [1953] AC 180.

172 (2) 86.

173 *Supra*.

prevented the loss with **certainty**.[174] It remains to be seen whether a failure to use an ES which caused loss that would otherwise have been prevented, would be held to constitute negligent conduct by the courts.[175]

Tapper[176] infers from the *General Cleaning* decision[177] that the courts will insist on the proper maintenance and operation of new technology when it is installed. The stage has already been reached where in some areas, like air traffic control, it would be negligent not to use computer technology.[178] Another example is found in the legal field where LEXIS, the computerised legal information retrieval system, has been described as an essential tool in a modern law firm.[179] Some firms even require that such a system be consulted before work is finalised, partly to avoid a malpractice suit.[180]

2.7 Professional liability

2.7.1 General

Software engineering is regarded as

Professional liability is governed firstly by the contractual relationship that exists

174 *Paris v Stepney Borough Council* [1951] AC 367; *Bolton v Stone* [1951] AC 850.

175 Reed (2) 86.

176 At 249.

177 *Supra*.

178 Tapper *ibid*. This is an example of a situation where the non-use of an ES may cause damage: see ch 2 par 11 *supra*.

179 See the American decision of *United Nuclear Corp v Cannon* 564 F Supp 581 591.

180 Tapper 249.

between the professional and the client.[181] However, professionals may also be held liable under the general tort of negligence if there is a duty to take care.[182] This duty may also exist towards parties with whom there is no contractual nexus.[183]

There are no general principles which could be applied for the whole range of professional expertise; each profession has over the years accumulated its own specialised body of case law. Because the development takes place on a case-by-case basis, it is difficult to extract general principles applicable to a relatively new profession such as software engineering.[184] The standard of care expected by a professional is that of the ordinarily competent member of that profession.[185] Rowland and Rowland divide professions into two loosely defined categories:

(a) Those in which the practitioners cannot guarantee the results of their

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181 See ch 3 par 2.7 *supra* and also ch 6 par 6.2 *infra*.

182 Rowland and Rowland 238.

183 In the area of safety-critical systems such as MES's, the following two policy reasons act both for and against the principle of professional liability *per* Rowland and Rowland 239:

> (a) Where the potential for damage is so great that it will be unjust to hold the designer liable; and
>
> (b) Where it is reasonable to apportionate the liability due to the particular type of expertise involved.

184 Rowland and Rowland 240.

185 In *Bolam v Friern Hospital Management Committee* [1957] 1 WLR 582 586 McNair J put it thus:

> The test is the standard of the ordinary skilled man exercising and professing that special skill; it is well established law that it is sufficient if he exercises the ordinary skill of an ordinary competent man exercising that particular art.

labour, for example doctors and lawyers; and

(b) those in which the practitioners can be said to impliedly warrant to produce a particular result, such as architects and engineers.

In cases pertaining to category (b) the professional has a particular knowledge of the end result required and this leads to a higher standard of care required by the courts.[186] Software engineering falls into this second category of professions as they usually have knowledge of the end result required.

2.7.2 Standard of care

Rowland and Rowland[187] point out that the major growth in the use of computer software in safety critical applications is causing the software industry as well as the relevant regulatory authorities, a lot of concern. The reason for this is that, because it is impossible to test software exhaustively, a fault may remain undetected for years before surfacing. One of the methods established to accomplish safe software is to formulate standards for the specification, design and implementation of safety related software and systems.[188] As stated before,[189] safety standards formulate the legal standard of care in such circumstances. In order to determine whether the producers of defective software have been negligent, it is necessary to define the standard of competence expected of software engineers and identify the methods of assessing such competence. Guidance on the responsibilities and possible legal liability of software engineers is found in the "Professional Brief on Safety-Related

186 *Greaves and Co v Baynham Meikle* [1974] 1 WLR 1261.

187 Rowland and Rowland 237.

188 The formulation of standards is done under the auspices of the International Electrotechnical Commission (IEC): Rowland and Rowland 238. In the RSA, the South African Bureau of Standards (SABS) fulfils this function: see ch 6 par 6.2 *infra*.

189 Par 2.2.2 *supra*.

Systems" of the Institution of Electrical Engineers (IEE) which includes a Code of Practice for engineers and managers working on safety-related systems. Liability revolves around the "competence" of the persons involved and it is pointed out that because appropriate education and training is insufficient, relevant experience is becoming more important.

An action based on professional negligence against the producers of an ES will attempt to show that the producers failed to take due care in the construction of the ES, and that this lack of care resulted in failure leading to an injury.[190] In order to assess whether a duty to take care exists and if there was a failure resulting in harm, regard is had to the guidelines developed by law to measure the behaviour of professionals are regarded. In defending a claim of negligence, the producers will have to prove that they took all reasonable care to avoid such an eventuality. This can be done by showing that al relevant standards and codes of practice have been adhered to.[191] If, on the other hand, the relevant standards and or codes have not been adhered to, the onus will be on the producers to explain why not and to show that what was done, in effect achieved an equivalent or higher standard.[192] The current problem with this approach is that mandatory universally-accepted and well-defined software standards and codes of practice do not yet exist.[193]

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190 Bott *et al* 236-237.

191 *Bevan Investments v Blackhall and Struthers* [1973] 2 NZLR 45 49:

> A design which departs substantially from relevant engineering codes is *prima facie* a faulty design unless it can be demonstrated that it conforms to accepted engineering practice by rational analysis.

192 Bott *et al* 237.

193 In the absence of mandatory software standards, responsible software suppliers such as the **Legal Software Suppliers Association** apply self-regulation by scrutining and testing members' software before it is distributed: Irving 1996 *SJ* 926.

2.7.3 Software engineers

Software engineers commissioned to design safety-related systems will be aware of the need of assurance that the system will not fail in so far as it is possible to achieve such a result. Procurers have a duty to contract a competent consultant which implies that they must satisfy themselves that the contractor is suitable. Problems arise where the product is of a specialised nature and contractors present themselves as being competent. It is reasonable to expect a higher level of skill and responsibility from an engineer who professes specialist expertise in a particular area.[194] Rowland and Rowland[195] argue that notwithstanding this responsibility of the client to engage a competent engineer, the standard of care required of the latter includes an appreciation of her own limitations as to knowledge, experience, facilities, resources, etcetera as well as the preparedness to declare such limitations.[196] There may, therefore, be a duty on the producers to advise clients to seek expert advice in the case of requirements that are above the expertise of the software contractor. Although the client is entitled to expect the exercise of a reasonably professional judgement, there is also the further problem of economic constraints resulting in the lowest tender being accepted even though it may prejudice the safety level of the product. If the client is unwilling to pay for a design of sufficient integrity there is a duty on the software contractor to warn the client that this is the case. Software integrity is primarily achieved through **quality assurance** during specification, design and implementation. Rowland and Rowland states that there are no established and set standards which can be used by software engineers developing safety-critical software.[197] However, it is submitted that the authors

194 Rowland and Rowland 250.

195 At 243.

196 Such conduct is recommended by the IEE's "Professional Brief": Rowland and Rowland 243.

197 At 246. See also Bott *et al* 224-225.

must either be unaware of ISO 9000,[198] or their research material is dated. Rowland and Rowland[199] notes that the implication for novel or pioneering designs is that research and development will be stifled and inhibited when such designs are found to constitute negligent behaviour without further ado.[200]

In conclusion it can be stated that software engineers are required to guarantee the adequate safety of software systems. The software contractor must therefore undertake a risk analysis of the application area and select the necessary techniques to achieve the integrity level of the finished product.[201] While the client may in some circumstances undertake the risk analysis, the responsibility falls ultimately on the contractor who has a duty to advise the client. Budgetary constraints are no defence as it is the contractor's duty to advise of an inadequate budget rather than to provide an inadequately safe product. Software engineering is a fast moving discipline with software continually being used in hitherto unknown applications and although there are no agreed standards, a body of knowledge representing "established best practice" is growing fast.[202]

2.8 Product liability

In terms of the common law consumers could only sue manufacturers for injuries caused by a product if a direct contractual relationship existed between them (privity of contract).[203] After the seminal decision of *Donoghue v Stevenson*,[204] it was

198 An international quality assurance system used during the production of software: see ch 6 par 6.2 *infra*.

199 At 245.

200 The protection of consumers, however, must enjoy priority.

201 Rowland and Rowland 244 *et seq*.

202 *Ibid*.

203 *Winterbottom v Wright* (1842) 10 M&W 109, 152 ER 402. *Cf* Fleming (2) 480 *et seq*; Hoffman and Hill-Arning 79-81.

accepted in English law that an activity which foreseeably exposes others to danger if proper care is not observed, creates a duty to take reasonable care to safeguard such others from incurring physical harm, notwithstanding the absence of a contractual nexus.[205] Lord Atkin put it thus:[206]

> ....a manufacturer of products, which he sells in such a form as to show that he intends them to reach the ultimate consumer in the form in which they left him, and with the knowledge that the absence of reasonable care in the preparation or putting up of the products will result in injury to the consumer's life or property, owes a duty to the consumer to take that reasonable care.

Responsibility was applied to any commodity, natural or processed which was not reasonably safe to life, health or property.[207] Products causing only economic loss are excluded as they are viewed as belonging to the province of warranty, not tort.[208] Another reason for excluding protection of economic loss lies in the whole purpose of products liability, which is the promotion of safety in products with its primary concern in physical injury.[209] Damages for pain and suffering are recoverable and contributory negligence of the plaintiff may lead to a reduction of the amount of damages awarded.[210]

Defects in products may stem from negligence in the manufacturing, designing or marketing process, all of which have to be proved by the plaintiff.[211] However, the

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204 *Supra.*

205 Fleming(2) 483; Hoffman and Hill-Arning 80.

206 *Donoghue v Stevenson supra* 599.

207 *Ibid.*

208 *Ibid.* On product liability in general, see Hoffman and Hill-Arning 77-85; Hodges *et al* 229-249.

209 *Lambert v Lewis* [1982] AC 225 278. *Cf* Fleming(2) 495 *et seq.*

210 Hoffman and Hill-Arning 81. See also pars 2.2.3 and 2.4 *supra.*

211 Fleming(2) 485; Hoffman and Hill-Arning 80; Hodges *et al* 233.

courts came to the rescue of the plaintiff by applying the procedural device *res ipsa loquitur* to the manufacturing process once the plaintiff and other forces have been eliminated as likely causes of the injury.[212] The maxim raises an inference of negligence on the part of the manufacturer, whereupon the onus of proof is shifted to the defendant in order to disprove negligence.[213] Because of the difficulty of the defendants to exculpate themselves in these situations,[214] the operation of the maxim comes close to effecting strict liability.[215] However, even aided by the *res ipsa loquitur* maxim, some form of negligence still has to be proved, which does not protect customers from defects that cannot be reasonably discovered, or from problems of causation in for example, the case of mass disasters resulting from harmful products.[216] Once it was realised that the negligence regime was insufficient to protect consumer interests, coupled with the adoption of strict liability principles for product injuries, originating in the USA, by the EU Directive of 1985,[217] it was inevitable that strict liability measures would be instituted, and for that purpose the British Consumer Protection Act of 1985 (CPA) was promulgated.[218]

3. Strict liability

The forms of strict liability pertinent to ES liabilities are vicarious liability and products

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212 Eg *Grant v Australian Knitting Mills* [1936] AC 85; *Martin v Thorn Industries* [1978] WAR 10; *MacLachlan v Frank's Rental* (1979) 10 CCLT 306. See par 2.3 *infra*.

213 *Grant v Australian Knitting Mills supra*; Fleming(2) 486.

214 See par 2.3 *supra*.

215 *Shandloff v City Diary* [1936] 4 DLR 712 719. Fairness to the consumer and accident deterrence was combined to place responsibility for defective products on the manufacturer: Fleming(2) 496.

216 Fleming(2) 487.

217 85/373: see part II par 8 *infra*.

218 See par 3.2 *infra*.

liability.[219] It must be noted that as in other legal systems, civil liability arising from aviation is subjected to strict liability in terms of specific legislation.[220]

3.1 Vicarious liability

Masters are held vicariously liable for torts committed by their servants in the course of their employment.[221] A servant is any person who works for another subject to the control of that other person regarding the manner in which the work shall be done;[222] employees are therefore the servants of their employers. Skilled or self-employed workers are independent contractors who are not under the control of the person hiring them to do the work and can therefore not be regarded as servants. In general a person will thus only be liable for the torts committed by their employees and not the torts committed by independent contractors. However, the trend of professionals to enter salaried employment in modern business is causing increasing difficulty in applying the control test.[223] For this reason the control test has been adjusted to enquiring rather whether ultimate authority in the person's work resides in the employer so that she was subject to the latter's orders and directions.[224] A more useful alternative is the "organisation" or "enterprise control" test in terms whereof it is determined whether the would-be servant is part of the employer's

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219 See Fleming(2) 327-333 for an outline of the various other forms of strict liability in English tort law.

220 S 76(2) of the Civil Aviation Act of 1982. Fleming(2) 331. This is especially pertinent to the example of the ES Machine which consists of a fly-by-wire piloting system: see ch 1 par 1.1 *supra*. Cf the Aviation Act 74 of 1962 in SA: Ch 6 par 7.2 *infra*.

221 James 374; Fleming(2) 367 *et seq*.

222 The control test: see Fleming(2) 370.

223 Fleming(2) 370.

224 *Zuijs v Wirth Bros* (1955) 93 CLR 561.

organisation or not.[225] An example of the working of the organisation test is found in the situation of hospitals which are held vicariously liable for the negligence of their professional staff as long as they are subordinated to the hospital organisation.[226] Where a hospital offers complete medical treatment, it assumes a personal duty towards the patient which includes independent consultants.[227]

The defendant will, however, be liable for the torts of independent contractors whom she has instructed in the following instances because there the conduct of defendant amounts to negligence *per se*:[228]

(a) Where the contract of work to be done is likely to involve the commission of a tort;[229]

(b) where an exceptionally high duty of care is imposed upon a person by law;[230] and

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225 *MacDonald v Glasgow Hospital* 1954 SC 453; Fleming(2) 372.

226 In earlier years hospitals were only responsible to patients for the performance of its administrative staff but not for the negligence of doctors and nurses in matters of skill and competence: Fleming(2) 373. See also the SA position: ch 3 par 3.4.2.1 *supra*.

227 Fleming (2) 373 notes a growing tendency of finding duties of reasonable care in vicarious relationships, resulting in the master's personal liability. See also par 3.1 *infra*, part III pars A 4 and B 4 *infra* with regard to similar aspects of vicarious liability in the foreign systems investigated.

228 In such circumstances the mandator and independent contractor are jointly liable: James 377.

229 An example is the demolition of a building in a densely populated area, causing dust and noise affecting people at work.

230 An example is the doing of dangerous things (except driving) near a highway.

(c) in cases of strict liability such as liability in terms of the Rule in *Rylands v Fletcher*[231] and product liability in terms of the CPA.

The question of whether the servant has acted within the scope of the defendant's employment is one of fact which will depend upon the circumstances of each case.[232] An important question is whether a deviation or departure from duty has occurred and if it has, whether the servant has acted within the course of employment.[233] The employer is always personally liable for acts authorised or ratified by herself.[234]

3.2 Products liability in terms of the Consumer Protection Act (CPA)[235]

The CPA was passed in 1987 in pursuance of the EU Directive on Product Liability.[236] In contrast to the other EU member states' implementing legislation,[237] the CPA bears little resemblance to the provisions of the EU Directive,[238] as the British draftsmen pertinently exercised greater linguistic

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231 (1868) LR 3 HL 330. The doctrine known as the rule in *Rylands v Fletcher* imposes strict liability on a person who brings on her own land something likely to do mischief if it escapes and it consequently does escape and causes harm. See in general, James 402-404; Fleming (2) 334 *et seq*.

232 James 376; Fleming(2) 377. In this regard policy decisions play an extensive role.

233 Fleming(2) 377.

234 In such a case the employer has acted herself, albeit through an instrument (the servant): Fleming(2) 369.

235 Consumer Protection Act of 1987.

236 85/374: see part II par 8 *infra*. On the provisions of the CPA in general, see Reed(2) 73-75, Hoffman and Hill-Arning 77-79, Fleming(2) 496-450.

237 See part III pars A 5.6 and B 3.3 *infra*.

238 See part II par 8 *infra*.

independence.[239]

3.2.1 Strict liability

In essence, the CPA provides for the liability of producers or suppliers of products in the course of a business for the suffering of personal injury or property damage caused wholly or partly by a defect in the product, irrespective of any fault on the part of such producer or supplier.[240] Such liability cannot be excluded in regard to the injured parties or their dependants in any contractual provision.[241]

3.2.2 Product

A product is defined as "any goods or electricity and includes a product which is comprised in another product whether by virtue of being a component part or raw material or otherwise".[242] "Goods" are defined in section 45 CPA "any natural or artificial substance" which suggests that goods must be tangible.[243]

3.2.3 Defect

A product is defective if it does not provide the level of safety that persons generally are entitled to expect, taking all the circumstances into account, including the presentation of the product, instructions or warnings, the use to which it could reasonably be expected to be put, and the time when the product was put into

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239 Hoffman and Hill-Arning 77.

240 S 2.

241 S 7.

242 S 1(2).

243 It seems, therefore, that the CPA will only apply to software marketed in a tangible form: Reed 1988 *CL&P* 149.

circulation.[244] This establishes the "consumer expectation" test for defectiveness according to which a defect in a product is defined in terms of the safety which the user thereof is entitled to expect.[245] In determining the safety which persons are entitled to expect from a product, all circumstances are taken into account, especially those conditions mentioned in section 3 of the CPA.[246] Although there is no case law yet which would illustrate the application of these considerations in practice, Hodges *et al* state that safety is a variable and relative concept and that absolute safety is unobtainable. The fact that the safety of a product supplied after that time is greater than the safety of the product in question, does not *per se* indicate a defective product.[247]

3.2.4 Producer

The plaintiff can institute a claim against the producer or anyone who holds herself out to be the producer, or the importer of the product into the EU or against the supplier.[248] The producer is the manufacturer of the product.[249] The supplier will only be liable if she refuses to furnish the name of the producer or importer upon request within a reasonable time.[250]

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244 S 3.

245 See part II par 8.3.4 *infra*.

246 *Supra*.

247 *Ibid*.

248 S 2(2).

249 S 1(2).

250 S 2(3).

3.2.5 Damage

Liability is limited to death or personal injury[251] or damage to property ordinarily intended for private use or consumption[252] and does not cover damage to the product itself or to any product containing the defective product, neither does it cover pure economic loss.[253] The damage must exceed 275 pounds sterling[254] but no maximum limit upon the total liability of a defendant for damage caused by identical products with the same defect, is imposed.[255] In pursuance of the EU Directive no compensation for pain and suffering is provided for: such claims must be instituted in terms of traditional liability principles.[256]

3.2.6 Causation

The damage must be caused by a defect in the product.[257]

3.2.7 Defences

The CPA[258] contains all the defences provided for in the EU Directive.[259] These

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251 S 5(1).

252 S 5(1) and (3).

253 S 5(2).

254 S 5(4).

255 In terms of the EU Directive, member states are permitted to provide for a maximum liability for one defendant arising from identical products: see part II par 8.3.5.*infra*.

256 See part III par 8.3.5 *infra*.

257 S 2(1).

258 S 4.

259 Art 7 EU Directive 85/374: see part II par 8.3.8 *infra* for a detailed discussion of the provided defences.

consist of:

(1) the legal-compliance-defence, in that the defect is due to the compliance of the product with mandatory regulations issued by public authorities (eg health or safety regulations);[260]

(2) the non-distribution-defence, in that the product was not put into circulation by the producer (eg the product was stolen);[261]

(3) the non-commercial-defence, in that the product was not made or supplied in the course of business or it was done without a profit motive;[262]

(4) the later-defect-defence, in that the defect did not exist at the time when the product was put into circulation;[263]

(5) the development risk defence, in that the state of scientific and technical knowledge within the industry concerned at the time the product was put into circulation was not such that a producer of the same products might be expected to have discovered the defect;[264] and

(6) the sub-supplier's-defence, which exonerates the producer of a component part of liability if the defect is due to the design of the product in which the component part is fitted or to the instructions given by the manufacturer of

260 S 4(1)(a).

261 S 4(1)(b).

262 S 4(1)(c).

263 S 4(1)(d).

264 S 4(1)(e).

the final product.[265]

The enactment of the development risk defence is optional, member states may choose whether they want to permit such a defence or not.[266] The motivation for this defence lies in the recognition that certain innovative products may contain unknown hazards about which accurate warnings cannot be given.[267] The risk of using these products is therefore put on the consumer because the products are useful and motivation should be encouraged. The essence of the defence is that the state of knowledge was such that the defect was not discoverable when the product was supplied, in other words an objective test is applied.[268] The wording of section 4(1)(e) of the CPA[269] is not the same as that of article 7(e) of the EU Directive.[270] Unlike the EU Directive, the CPA relies on a negligence standard and permits the defence if a fictitious producer of that kind of product would not have known of the defect.[271] The EU Commission has concluded that the CPA wording is inconsistent with the Directive, and that it violates EU law and should be rectified.[272] From the wording of the EU Directive it can be seen that the subjective state of the knowledge of the producer or supplier is irrelevant to this defence, what is relevant is the objective state of scientific and technical knowledge at the time and whether the

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265 S 4(1)(f).

266 Art 15 (1)(b) EU Directive: see part II par 8.3.8 *infra*.

267 Hodges *et al* 247.

268 Art 7(e) EU Directive reads:

> (The producer shall not be liable as a result of this Directive if he proves): that the state of scientific and technical knowledge at the time when he put the product into circulation was not such as to enable the existence of the defect to be discovered.

269 See defence (5) *supra*.

270 *Supra*. See also part II par 8.3.8 *infra*.

271 S 4(1)(c) CPA.

272 Hodges *et al* 247; Hoffman and Hill-Arning 78.

defect could have been detected, not whether the reasonable producer would have discovered the defect.[273] In contrast, it is concluded from the wording of section 4 of the CPA that the defence will be allowed even in a case in which the available knowledge pointed to the existence of the defect, as long as the producer was reasonable in not having the knowledge.[274] The effect of this defence is therefore to permit the producer to disprove negligence which is a very different matter from the strict liability that the CPA apparently introduces.[275]

3.2.8 Summary

The CPA introduces an additional regime of product liability, namely strict liability as opposed to the traditional fault-based liability for defective products. The essential principle is that the manufacturer, called the producer in the act, and certain others involved in the distribution of the product may be liable for death, personal injury or specified property damage resulting from a defective product even though on their part, there was no negligence towards nor breach of contract with the claimant. The potential plaintiff does not have to prove negligence but only has to establish that the product was defective, that the damage has occurred, and that there was a causal link between the defect and the damage. With regard to the relevant optional choices allowed by the EU Directive, the CPA does not award compensation for property damage less than 275 pounds and no potential limit is imposed on damages for personal injury caused by the same defect of similar products. A defect is defined in terms of the safety which a person is entitled to expect, taking all circumstances into account. Apart from the defences provided for in the EU Directive, the CPA also includes the development risk defence which implements a different test for the

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273 See part II par 8.3.8 *infra*. See also part III pars A 5.6.7 and B 3.3.7 *infra* with regard to the wording of the same defence in the German and Dutch statutes, respectively.

274 Hoffman and Hill-Arning 78; Reed 1988 *CL&P* 150.

275 *Ibid*. *Cf* Martinek 1995 *TSAR* 641; Zekoll 1989 *AJCL* 811; Dielman 1990 *Hastings I&CLR* 429.

producer's liability than the one prescribed by the Directive.[276]

The CPA will apply to computer software (and also to ES's) if software falls within the ambit of a "product".[277] From the wide definition of a product under the Act it seems that software may fall within the ambit of the Act provided it has a tangible quality associated with "goods" and it was acquired in the same way as goods, in other words by way of a sale or lease and not as part of a service.[278]

4. Conclusion

Actions for software liability in English law may be based on the tort of negligence, vicarious liability and the strict product liability provisions contained in the CPA.

4.1 The use of a defective expert system

4.1.1 Liability of the producers

In circumstances where the ES is regarded as an integral part of of the provision of a service, damage caused by the use of a defective ES may render the producers of such an ES liable in terms of an action based on the tort of negligence in terms of which the plaintiff carries the burden of proof with regard to all the requirements, namely a duty of care, breach of such duty and the causing of damage.[279] Where damage consists of injury to person and property the producers have a clear duty to prevent harm.[280] Where pure economic loss is suffered, such loss is only

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276 See par 3.2.7 *supra*.

277 See par 3.2.2 *supra*.

278 See ch 3 par 2.6.1.1 *supra*.

279 See par 2.1 *supra*.

280 See par 2.2.1 *supra*.

compensable by tortious liability if sufficient policy reasons exist for the imposition of such liability.[281] In this instance an analogy to negligent misrepresentation cases is made in terms of which the English courts require the existence of a special relationship between the parties as well as knowledge on the part of the defendant that a class of persons will rely on the information, before economic loss will be compensated.[282] This means that users and their clients who suffer pure economic loss through the use of a defective Intelligent Assistant will only have a claim against the developers based on negligence if the ES was custom made for the user, thereby establishing a special relationship, and if the developers had knowledge of the class of persons (the clients of the users) who will rely on it.

As software engineering is regarded as a profession in England, the producers will also be liable on the basis of computer malpractice.[283] In this regard the application of product safety standards and quality assurance codes of practice are indicative of the relevant standard of skill in the software engineering profession.

Where the ES is regarded as a product, strict liability principles in terms of the Consumer Protection Act will apply.[284]

4.1.2 Liability of the users

In the same way the users have a duty to take care and will be liable in negligence when a defective ES is used.[285] In the case of a professional user the standard of care is that of the members of the relevant profession of the user and if a duty to take

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281 See par 2.2.3 *supra*.

282 See par 2.5 *supra*.

283 See par 2.7 *supra*.

284 See par 3.2 *supra*.

285 See par 2.2.1 *supra*.

care is breached by the professional in using a defective system, the latter may be liable as a joint tortfeasor with the developer of the ES.[286]

4.2 The incorrect use of a sound expert system

The users of an incorrect ES will be liable towards an injured party if a duty of care was breached in the causing of damage.[287] In the case of a professional user, the same principles apply as mentioned above.

4.3 The non-use of an expert system

The user who fails to use an ES will be liable in negligence if there was a duty on her to use the ES.[288] In the case of a professional user, once again the same principles as mentioned above, apply.

B. United States of America

1. Introduction

1.1 Tortious liability

1.1.1 General

In American law, as in English law, there is not a general law of tort, only a law of torts which means that there is a body of civil wrongs for which the court will provide

286 See par 1.1.3 *supra*.

287 See par 2.2.2 *supra*.

288 See par 2.6 *supra*.

a remedy in the form of an action for damages.[289] Liability is based on socially unreasonable conduct and the various torts consist of breaches of duties imposed by law:[290]

> The determination of the issue of duty and whether it includes the particular risk imposed on the victim ultimately rests upon broad policies which underlie the law. These policies may be characterised generally as morality, the economic good of the group, practical administration of the law, justice as between the parties and other considerations relative to the environment out of which the case arose. They are found in all decisions whether based on former decisions of court or on a fresh consideration of the factors found in the current environment.

For this reason the law of torts cannot be regarded as static and there are no limits to development as new causes of action are continuously being recognised.[291] The purpose and function of the law of torts is to assign and compensate for injuries sustained by one person as the result of the conduct of another.[292] The same distinction is made between general and special damages as in English law,[293] and although it is acknowledged that compensation is the primary function of tort law, punitive or exemplary damages are also awarded to the plaintiff in some circumstances for the purpose of punishing the defendant and deterring others from

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289 Prosser and Keeton 2.

290 *Per* the court in *Suter v San Angelo Foundry & Machine Co* (1979) 81 NJ 150 173; 406 A 2d 140 151.

291 Prosser and Keeton 5.

292 Although the law of torts in the USA consists of state law of which the details may vary from state to state, the principles, derived from English common law, are the same in all jurisdictions. Most of tort law is judge-made law as state legislatures are ineffective due to the lobbying of powerful opposing groups representing the insurance industry on the defence side and the American Trial Lawyers Association (ATLA) on the plaintiff's side. Tort law is a highly politicized and lucrative business due to the peculiarly American civil trial by jury with the right to award punitive damages and a specialist plaintiff's bar where plaintiffs' attorneys are entitled to a share in the award if successful: see Fleming (1) 181.

293 See par A 1.1.1 *supra*.

following the defendant's example.[294] The policy of punitive damages is a controversial subject, even more so since the 1970's during which time a trend of awarding punitive damages against so-called "deep pocket defendants" was established.[295]

1.1.2 Categories of torts

The fundamental basis of tort liability rests upon three different grounds, namely (1) intent of the defendant to interfere with the plaintiff's rights, (2) negligence and (3) strict liability.[296] These are the three basic categories into which all the different torts can be classified. For purposes of this study only grounds (2) and (3) are relevant.[297] Providers of **services** have traditionally been held to a negligence standard based on reasonable practice whereas sellers and manufacturers of commercial **products** face strict liability for injuries to consumers caused by defects in their wares.[298] The reason for the specific choice of a liability standard is based on public policy which views **product** sellers as economically more able to spread a loss over a large number of users.[299]

1.1.3 Joint tortfeasors

In the case of multiple wrongdoers joinder of action is permitted in American law whether the parties acted in concert (conspiracy) or whether they contributed to the

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294 See Prosser and Keeton 15 *et seq.*

295 *Ibid.*

296 Prosser and Keeton 31.

297 Delictual liability arising from the use of ES's is discussed only with regard to **negligent conduct:** see ch 1 par 1.4 *supra.*

298 Frank 1988 *AIM* 110.

299 *Ibid.*

whole or part of the damage caused.[300] The strict common law principle was altered by the adoption of various Civil Codes of Procedure in a majority of states.[301] The plaintiff may claim compensation against any or all of the defendants jointly and severally and the defendants have a right to contribution among each other which allows for the apportionment of damages.[302] Contribution must be distinguished from indemnity which refers to an order requiring a party to reimburse in full another party who has discharged a common liability, for example in the case of vicarious liability or liability for the torts of an independent contractor.[303] In the case of ES liability incurred by more than one party, actions can be instituted against them jointly and severally with a right of contribution among them.

1.2 Software liability

The courts base their decisions on whether an object is a **product** or a **service** on policy reasons and will pronounce on the nature of ES's by having regard to analogous case law involving products and services similar to ES software.[304] The policies considered include the importance of development of new ES's; the specific gain that society would get from the ES; the harm to the plaintiff and the ability of the software industry to regulate itself as to competency and skills.[305] The following factors may have an influence on the classification of software:

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300 Prosser and Keeton 322 *et seq.*

301 Prosser and Keeton 325.

302 Prosser and Keeton 336-338 345-355.

303 See par 3.2 *infra.*

304 Turley 1988 *CLJ* 458 *et seq.* See also ch 3 par 2.6.1.1 *supra.*

305 Turley 1988 *CLJ* 458.

(a) Distribution of software

As mentioned before,[306] mass produced and marketed software is viewed as products whereas the one-off custom-made ES for a specific user is viewed as a service. Where products are mass-produced, the following policy goals of products liability need to be served: the manufacturer should be liable for defective goods because it is able to prevent them from occurring in the first place, customers rely on manufacturers to provide safe products, the manufacturer is better able to spread the cost of insuring against injuries through increased prices and the consumer would be severely burdened by the need to trace a defect to its source.[307] The importance of these underlying policies in the law of strict liability was confirmed in the case of *La Rossa v Scientific Design Co.*[308] In this case the court had to consider the question of whether the supplier of radioactive pellets could be held strictly liable for the death of one of the workers which was caused by exposure to radioactive dust while loading them. The court noted that the rendering of "professional services form a marked contrast to consumer products cases"[309] and concluded that because the plaintiff rendered a highly specialised service which had no impact on the public at large, the policies behind strict liability were not at issue, and *Scientific Design* was therefore not strictly liable for the defendant's death.[310]

(b) Information product

In the event that software such as an ES is classified as an information generator rather than traditional goods does not mean *ipso facto* that the ES cannot be labelled

306 Ch 3 par 2.6.1.1 *supra*.

307 Lamkin 1994 *ELJ* 744.

308 (1968) 402 F 2d 937 (3d Cir).

309 At 942-943.

310 *Ibid.*

a product to which strict liability principles apply.[311] In *Aetna Casualty & Security v Jeppeson & Co*[312] the court concluded that an aeronautical chart, designed and distributed for pilots making instrument approaches to various airports, is a product for purposes of applying principles of strict liability. *In casu* a defect in the chart allegedly caused the aircraft to crash. However, the court held that the pilot was negligent in relying on the defective chart.[313] In a series of cases[314] involving aeronautical charts[315] the courts had the opportunity to discuss the nexus between mass production and strict liability policies and came to the conclusion that the furtherance of policy goals is the penultimate consideration in determining whether something is a product for the purposes of strict liability.[316]

Turley[317] states that it is improbable that an ES developer would be held strictly liable in cases where physical injury was caused by the output of an ES which requires significant human intervention and review by a professional user.[318] He illustrates the situation by referring to an engineer who uses an ES to design a plan for a bridge. The ES requires the user-engineer to furnish various kinds of input during different stages of the program. Two weeks after the bridge is built, it collapses as a result of defective plans designed by the user-engineer. In these circumstances the ES cannot be regarded as a product for strict liability purposes because the product, the design plans, is a combined product constituted by the

311 Turley 1988 *CLJ* 460.

312 (1981) 642 F 2d 339 (9th Cir).

313 *Id* 343.

314 *Saloomey v Jeppesen & Co* (1983) 707 F2d 671 (2d Cir); *Fluor Corp v Jeppesen & Co* (1985) 216 Cal Rptr 68 (Ct App).

315 Charts used to assist pilots in landing aircraft.

316 *Fluor Corp v Jeppesen & Co supra* 71-72.

317 1988 *CLJ* 460.

318 Eg the Intelligent Assistant.

efforts of both the ES and the user. The ES actually functions as a service to the engineer.[319] Even if such a system is widely distributed and mass produced, the interaction with a professional user fits in more easily with the provision of a service.[320] Towards a third party who was injured by the collapse of the bridge, the use of the ES by the user-engineer (the professional user) would rather be viewed as the provision of a service for which an action based on professional negligence may be instituted against the user.[321] Conversely, an ES that requires no interaction with a user, thereby replacing the professional completely[322], is more similar to a product than a service because a product (information) is provided which is expected to be relied upon without verification or human input.[323] Mass produced ES's which cause injuries without user interaction would probably be classified as a product for strict liability purposes.[324] As many ES's will not take this form, the courts will have to decide upon the nature of each individual ES, taking into account the actual content and orientation of the system to a specific area.[325]

(c) Software development in conjunction with the user

Where software is developed with the help of the user, the developer provides

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319 The ES used in this illustration is the type of ES embodied in the Intelligent Assistant: see ch 3 par 11 *supra*.

320 Turley 1988 *CLJ* 462.

321 The ES is used as a tool or decision-aid in the execution of the professional user's duties - the type of ES identified as the Intelligent Assistant: see ch 3 par 11 *supra*.

322 Such a system is embodied in the type of ES identified as the Self-Help System: see ch 3 par 11 *supra*.

323 Turley 1988 *CLJ* 463. See also Westerdijk 81-95 who distinguishes between software that supports decision making, which is not a product, and software that directs decision making, which is a product in his view: see part II par 9.1.3 *infra* and part III par B 1.2 *infra*.

324 *Ibid*.

325 *Ibid*.

programming services or a service that is individually tailored to perform a specific task.[326] In such circumstances the ES, as a one-of-a-kind product, is viewed as a service for which strict liability is not appropriate.[327]

(d) Type of defect or error

Manufacturing defects occur when the product is not manufactured according to design and a design defect occurs in the actual underlying conception of the product.[328] Strict liability is applied to manufacturing defects while design defects are evaluated under a negligence standard.[329] The reason for this is that in the case of a manufacturing defect where the product has deviated from its specifications, it is relatively easy to determine if the appropriate standards were met from the specifications available, but in the case of a design defect the plaintiff will have to show that a non-defective design was reasonably available to the manufacturer.[330] The requirement of reasonableness in these cases points to an introduction of an element of negligence.

The design phase is difficult to distinguish from the production phase where the product is a computer program because the development of such a program is an ongoing process during which errors will often not be revealed until the system is in operation. Even then it may not be possible to determine during which phase the error occurred. This problem becomes critical when the software relates to medicine, for example in the case of an MES that regulates a life-supporting system used on

326 Custom-made software: see ch 2 par 10.1 *supra*.

327 *Ibid.*

328 Lamkin 1994 *ELJ* 742.

329 *Ibid.*

330 A task that will require expert testimony: Lamkin 1994 *ELJ* 743.

a patient in hospital.[331] Because the field of medicine lacks predictability and guaranteed results, the detection of errors in medical software can be a very difficult task as the error may only become apparent under real life circumstances.[332]

From the problems outlined above it seems that the manufacturing/design defect distinction is of limited practical value in the case of computer software. Lamkin is of the opinion that this lack of a useful distinction implies important policy reasons against applying strict liability to MES's. ES's that cause direct injury due to programming errors are comparable to products containing production defects to which strict liability might apply.[333]

In conclusion, the courts will have to look at each ES in its particular surroundings and determine its nature on a case-by-case basis. Apart from the obvious distinctions between the characteristics of a product and a service, the following factors complicate the classification of an ES:

(a) one-of-a-kind applications;

(b) human intervention as part of the expert system's deductive process;

(c) an application area where no user would **blindly** rely on the output of the system;

(d) experimental programs where the user is aware of the infancy of the testing process;

(e) where the user has contracted a programmer to develop an expert system

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331 For example, an ES Machine: see ch 1 par 1.4.1 *supra*.

332 Lamkin 1994 *ELJ* 743.

333 Turley 1988 *CLJ* 463.

and compensation is for the programmer's services rather than the value of the expert system program.

American courts have not yet addressed physical and economical injury caused by the use of ES software in the context of tort liability[334], but commentators[335] agree that, as in the case of software in general, the issue of whether the theory of negligence or strict liability applies to the producers of ES's depends on the question of whether the relevant ES's are products or services.[336] In the case of a defective ES, strict liability principles may apply to the producers if the ES is a product and negligence principles may apply if it is classified as a service.[337] In terms of the policies underlying strict liability the analogy of mass marketed ES's to a product is obvious because of similar characteristics between software programs distributed to more than one user and a product distributed to more than one consumer: the users rely on the safe structure and design of the ES, and the manufacturer (developer) and designer can spread the risk of losses through pricing and insurance. Furthermore, the injured party's ability to trace defects and establish negligence is rendered almost impossible by the complex nature and programming techniques of an ES. ES's that are mass produced and distributed, in other words standard software, may be regarded as products, whereas a custom made ES developed specifically for one particular user may be equated to the provision of a service.[338] Difficulty arises, however, when an ES that is neither a product nor a service, has to be analyzed. A typical example of such a system would be the type of system embodied in the

334 Tapper 264; Turley 1988 *CLJ* 457.

335 *Cf* Tapper 262 *et seq*; Frank 1988 *AIM* 109; Birnbaum 1988 *CLJ* 135; Tuthill 1991 *AI Expert* 51; Cole 1990 *CLJ* 167 185; Schmal 1992 *LT* 1; Levy and Bell 1990 *HTLJ* 1; Wolpert 1993 *DCJ* 519; Gill 1986 *HTLJ* 483.

336 Turley 1988 *CLJ* 461.

337 However, see Cole 1990 *CLJ* 185 *et seq* for a discussion of strict liability principles applicable to services.

338 Turley 1988 *CLJ* 458.

Intelligent Assistant[339] which, although it may consist of standard software that is mass produced and distributed, effectively performs a professional service usually offered by a human expert.[340] In this respect a very distinctive cause of action may also lie against the producers of ES's, namely that of **publisher's liability** which is based on misrepresentation leading to either strict liability or liability based on negligence.[341] Where an ES is incorrectly used or not used, the producers may be liable on the grounds of negligence in some instances.[342]

2. Negligence

2.1 Introduction

The basic elements of a cause of action in negligence are:

(a) A legal duty on the defendant to conform to a certain standard of conduct towards the plaintiff;

(b) a failure by the defendant to conform to the standard required resulting in a breach of that duty;

(c) a causal connection between the defendant's wrongful conduct and the plaintiff's resulting injury; and

339 See ch 2 par 11 *supra*.

340 See the arguments advanced by Anglo-American commentators in ch 3 par 2.6.1.1 *supra*.

341 See par 2.5 *infra*.

342 Cole 1990 *CLJ* 218 *et seq*.

(d) actual loss or damage suffered by the plaintiff.[343]

2.2 Requirements

2.2.1 Duty of care

2.2.1.1 General

The question of whether a duty of care exists between the defendant and the plaintiff is one of law.[344] In the absence of precedent the determinant is the foreseeability of harm but legal policy is conclusive. Factors of importance are the connection between the injury and the defendant's conduct, the moral blame applicable to the defendant's conduct, prevention of future harm and the prevalence and availability of insurance.[345] Based on these policy considerations, American courts have determined that a duty of care rests on the manufacturer of goods towards the consumer.[346] In *MacPherson v Buick Motor Co*,[347] Cardozo J held the manufacturer of an automobile with a defective wheel liable in tort for negligence.[348] Manufacturers or sellers could from then on be held negligent for (1) creating or failing to discover a flaw; (2) failing to warn or adequately to warn consumers about inherent risks of products relating to their reasonably foreseeable use; (3) distributing a defectively designed product. In cases involving physical injury, there is no difficulty

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343 Prosser and Keeton 164; Fleming(1) 183. The English tort of negligence has the same requirements: see par A 2.2 *supra*. See also ch 3 par 3.3 *supra* with regard to the requirements of a delict in SA law.

344 *Ibid.*

345 Fleming (1) 183.

346 Prosser and Keeton 682; Fleming(2) 482.

347 (1916) 217 NY 382, 111 NE 1050.

348 This decision opened the doors to plaintiffs who are not in privity of contract with the defendants.

in finding a duty of care, but in situations where the injury consists of pure economic loss, the scope of liability is much more restricted for fear of an incalculable and uninsurable burden on enterprise.[349] In these situations the foreseeability of harm is usually not enough to constitute liability.[350]

2.2.1.2 Omissions

The question whether a duty to use an existing ES in a particular situation exists, depends on the policy factors taken into account.[351] This relates to the possible liability of the user for omissions in case of the non-use of an ES. The question of whether a failure to use a computer system constitutes a breach of duty can be answered with reference to the case of *The TJ Hooper.*[352] In this case the plaintiff's barges were lost in a storm at sea while they were being towed by the defendant's tugs which were not fitted with radios. If the tugs had been outfitted with radios they would have received a storm warning and taken shelter, thereby avoiding the loss of the barges. Although it was not common practice to fit tugs with radios, the court found that the defendant was negligent in not having them on board, especially in view of the fact that the technology was easily available, relatively cheap, and its advantage was clear. In *United States v Fire Insurance Co*[353] the Coast Guard's actions in calculating the site of a navigation beacon manually rather than with the aid of an available computer system, which was known to be more accurate, were held to be potentially negligent. The defendant in *Chandler v United States*[354] was held to be negligent in a similar fashion for not effecting a computer

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349 Fleming (1) 184.

350 Many ES applications run only the risk of financial loss: see ch 2 par 9.2 *supra.*

351 Par 1.2 *supra.*

352 (1932) 60 F 2d 737.

353 (1986) 806 F 2d 1529.

354 (1988) 687 F Supp 1515.

search to ascertain whether certain arrears in taxes had already been paid.

2.2.2 Breach of duty

2.2.2.1 General

The duty of the defendant is defined in terms of the standard of care to which the defendant should be held. This standard is found in the conduct of the reasonable person in similar circumstances: the standard is therefore objective.[355] Of particular importance in applying the law of negligence to injuries caused by the use of a defective ES, the incorrect use or the failure to use an ES, is the standard of care required by the producers and users involved in the development and use of such systems. The professional defendant is held to a higher standard of care based on the knowledge, skill and even superior intelligence of such a person in relation to that of the ordinary person.[356] Breach of this standard of care results in professional malpractice.[357]

A problem experienced with ES's is the difficulty of establishing an appropriate standard of reasonable care for ES developers. Currently, producers and users are held to the reasonable standard of care of the average person responsible for the same functions in the industry. In this respect the possibility of adopting a fixed standard through the defining of software programming standards as well as the

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355 *Vaughan v Menlove* (1837) 3 Bing NC 468; 132 Eng Rep 490; *Fancher v Southwest Missouri Truck Center Inc,* (1981) Mo App 618 SW 2d 271; Prosser and Keeton 173; Fleming(1) 185. The English law of torts also uses the objective standard of care applied by the reasonable person: see par A 2.2.2 *supra*.

356 *Prooth v Walsh* (1980) 105 Misc 2d 653; 432 NYS 2d 668 (Sup); *La Vine v Clear Creek Skiing Corp* (1977) 557 F 2d 730 (10th Cir).

357 Prosser and Keeton 188.

recognition of the software industry as a profession is relevant.[358] Such standards would have the effect of attracting litigation as it would be easier to recover damages against developers held to a higher standard of care.[359]

2.2.2.2 Professional malpractice

Professionals are held to a higher standard of care namely that of the reasonable practitioner of the profession.[360] A deviation from this standard might result in a professional malpractice claim.[361] Most of the cases dealing with malpractice actions in the United States have been with regard to doctors and medical specialists, but other professions are subject to the same principles.[362] In the context of ES's the possibility of a malpractice cause of action may arise firstly, against the professional user who used or misused or failed to use the ES and secondly, against the producers of a defective ES.[363]

The cases pertaining to medical malpractice are especially relevant in the context of ES's since so many of them are in fact medical systems.[364] By undertaking to render medical services the doctor is understood to have the knowledge, skill and care ordinarily possessed and employed by members of the profession in good

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358 See par A 2.7.2 *supra*, part III pars A 5.6.3 and B 3.3.3 *infra* as well as ch 6 par 5.2.2.2 *infra*.

359 Turley 1988 *CLJ* 474.

360 Prosser and Keeton 185.

361 *Cf* the position in English law: see par A 2.7 *supra*.

362 *Sullivan v Henry* (1982) 160 Ga App 791; 287 SE 2d 652; *Davis v Tirrell* (1981) 110 Misc 2d 889 443 NYS 2d 136.

363 A "computer malpractice" claim: see par 2.2.2.3 *infra*.

364 See ch 2 par 4.2 *supra*.

standing.[365] Through the development of various rules,[366] this standard has evolved into one of "good medical practice" which means what is "customary and usual in the profession".[367] It is not expected of the professional doctor to cure the patient unless expressly so contracted.[368] One of the rules requires a physician to exercise reasonable care in ascertaining the functional facts upon which her diagnosis is based.[369] This entails the responsibility to ensure that the relevant facts are reliable. Where an ES provides the physician with information upon which professional decisions are based, a similar duty rests on the physician to ensure that the ES is reliable.[370] This duty can be fulfilled by having the system tested and certified according to recognised quality assurance systems, for example the ISO 9000 series test.[371] Not only would a professional's failure to ensure that a software system is reliable demonstrate a lack of care resulting in negligence, it would also be negligent for a professional to accept from a tested system an output containing a mistake that should have been obvious to someone in the profession.[372]

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365 Prosser and Keeton 187; *Sullivan v Henry* (1982) 160 Ga App 791; 287 SE 2d 652; *McPherson v Ellis* (1982) 305 NC 266; 287 SE 2d 892.

366 An example is the rule that a doctor must have the minimum requirements of skill and knowledge of a medical subject, regardless of personal views on that subject. This rule acknowledges that there are different schools of medical thought and alternative methods of treatment which entitle the doctor to be judged according to her choice of approach provided it is recognised within the profession: *Joy v Chau* (1978) 177 Ind App 29; 377 NE 2d 670.

367 Prosser and Keeton 189.

368 Prosser and Keeton 186. *Cf Salis v United States* (1981) MD Pa 522 F Supp 989.

369 Prosser and Keeton 190; Willick 1986 *Rutgers C&TLJ* 15; Gemignani 1987 *Rutgers C&TLJ* 319.

370 Willick 1986 *Rutgers C&TLJ* 15; Gemignani 1987 *Rutgers C&TLJ* 320.

371 *Ibid.* On ISO 9000, See ch 6 par 6.2 *infra*.

372 Gemignani 1987 *Rutgers C&TLJ* 321.

Another rule is the "similar localities" rule in terms whereof regard is had to the type of community the doctor practises in when the applicable standard of professional care is determined.[373] In terms of this rule, it is accepted that a country doctor, for example, does not have the same facilities, equipment or experience available as does the practitioner in the larger cities. This rule could be applied in the same way when determining the general professional standard regarding the use of an ES by a practitioner.[374] The problem could be manifested in two ways: (1) in the case of a claim for harm suffered based on the non-use of an ES; and (2) in the case of a claim for harm suffered because the ES used was outdated or not the most appropriate one. In terms of the similar localities rule, it can then be asked whether it is established practice for that particular professional in that locality to use such an ES or not. Conversely, courts may reject locality defences if information becomes nationally accessible via on-line computer services and mass-marketed ES's.[375] Professionals may be held to a national standard of information retrieval regardless of the locale in which they practice.[376]

2.2.2.3 Computer malpractice

The question arises as to whether a cause of action based on computer malpractice can be instituted against the producers of an ES. To date the American courts have been reluctant to create such a cause of action: In *Triangle v Underwriters, Inc v Honeywell, Inc*[377] the court dismissed claims of the plaintiff which, although not explicitly cited as computer malpractice, were nevertheless characterised by the plaintiff as such. The claims consisted of a "failure to supervise and correct

373 *Gambill v Stroud* (1976) 258 Ark 766; 531 S W2d 945; *McPherson v Ellis supra.*

374 Willick 1986 *Rutgers C&TLJ* 4-11; Gemignani 1987 *Rutgers C&TLJ* 325-332.

375 Gemignani 1987 *Rutgers C&TLJ* 11.

376 *Ibid.*

377 (1979) 604 F 2d 737 (2d Cir).

deficiencies in the system" and the "wrongful withdrawal of support personnel".[378] In *Chatlos Systems, Inc v National Cash Register Corp*[379] the court rejected an explicit claim of computer malpractice:

> The novel concept of a new tort called "computer malpractice" is premised upon a theory of elevated responsibility on the part of those who render computer sales and service. Plaintiff equates the sale and servicing of computer systems with established theories of professional malpractice. Simply because an activity is technically complex and important to the business community does not mean that greater potential liability must attach. In the absence of sound precedential authority, the Court declines the invitation to create a new tort.

Such a claim was also rejected in the more recent case of *Hospital Computer Systems, Inc. v Staten Hospital.*[380] Current obstacles that militate against the acknowledgement of a claim for computer malpractice are the absence of a standard by which the profession can be measured, the rapid development of the programming field causing any standard to become obsolete in a matter of years and the difficulty in identifying which profession's standards to consult given the diverse group of people involved in the creation of ES's.[381]

Turley[382] notes that the failure of the courts to allow a computer malpractice claim results in the developers of ES's, possessing superior intellectual capacity, escaping liability.[383] This could have the negative effect of producers innovating and

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378 *Triangle v Underwriters, Inc v Honeywell, Inc supra* 741.

379 (1979) 479 F Supp 738 (DNJ) 740.

380 788 F Supp 1351 (DNJ 1992).

381 Cole 1990 *CLJ* 207 concludes that a malpractice claim is simply premature because of the lack of minimal underlying basic standards.

382 1988 *CLJ* 474-475.

383 See also Cole 1990 *CLJ* 208.

distributing ES's without concern for liability based on a defined standard of care.[384] If the developers are held to a higher standard of care the industry could possibly attempt to define programming standards and computer malpractice insurance would be available. A computer malpractice claim should be allowed against the developers of ES's in terms of which it must be proved that a higher degree of care than that of an average reasonable person was breached. The industry should also regulate itself by requiring ES developers to receive credentials showing their competence to embark on certain projects. If the computer industry is unable to regulate itself, licensing requirements for the development of ES's should be imposed by government.[385]

2.2.3 Causation

The defendant's conduct must be a "cause in fact" of the injury and the burden of proof rests on the plaintiff on a balance of probabilities.[386] The negligence must also be the proximate cause of the injury which is determined by the foreseeability test. In this respect it is sufficient if the harm in general is foreseen.

The problem of causation in respect of a defective ES, in that the plaintiff is hard put to prove precisely who caused the defect, can be alleviated by the *res ipsa loquitur* doctrine in terms whereof the burden of proof is shifted upon the defendant as soon as a defect in the ES has been proved.[387]

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384 Turley 1988 *CLJ* 475.

385 Turley 1988 *CLJ* 477; Cole 1990 *CLJ* 208.

386 Fleming (1) 185.

387 Turley 1988 *CLJ* 471; Prosser and Keeton 143.

2.2.4 Damage

The defendant's breach of duty must have caused the plaintiff damage.[388] Damage consists of pecuniary and non-pecuniary loss.[389] The former, consisting of medical costs, physical damage to property, pure economic loss and loss of earnings is compensated with special damages and the latter, consisting of damages for pain and suffering, with general damages. There are no tariffs for the awards and juries have unlimited discretion in this regard. Coupled with the system of contingency fees due to lawyers, awards for damages have become astronomical in the United States. Fleming[390] notes that juries are often vindictive towards corporate defendants and that "caps" placed on awards for medical malpractice by some jurisdictions, have been struck down for violating state constitutions. Punitive or exemplary damages are also awarded more frequently against doctors and hospitals for medical malpractice and against manufacturers for defective products.[391] Recovery of personal and property damage is always compensable but pure economic loss is contentious and needs exceptional reasons for succeeding.[392]

2.3 Burden of proof

The burden of proof of the defendant's negligence lies upon the plaintiff who must convince the jury on a preponderance of the evidence.[393] This burden may be aided by presumptions and in the case of circumstantial evidence, the doctrine of *res*

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388 Fleming (1) 186.

389 *Ibid.*

390 Fleming(1) 187.

391 Fleming(1) 187.

392 Tapper 255.

393 Prosser and Keeton 239.

ipsa loquitur evolved.[394] The doctrine has been held to have two effects, in the first instance it is only regarded as a form of circumstantial evidence in that the jury may draw an inference of negligence[395] from the circumstances,[396] and secondly, it is held to have the effect of shifting the burden of going forward with the evidence[397] from the plaintiff to the defendant.[398] Some courts have even held that the doctrine shifts the ultimate burden of proof to the defendant, requiring the defendant to adduce evidence of greater weight than the plaintiff.[399] However, the latter decisions have not been followed outside the states of Louisiana and Mississippi; the major trend in the states is to view *res ipsa loquitur* as raising only a permissible inference.[400] Before the codification of products liability the doctrine was extensively used by the courts to relieve the burden of proof of negligence of the plaintiff.[401] The onerous duty of the defendant to rebut this inference of negligence in fact lead to liability without fault.[402]

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394 Prosser and Keeton 243.

395 A permissive inference: see par A 2.3 *supra*.

396 *Strick v Stutsman* (1982) Mo App 633 SW 2d 148; *Lanza v Poretti* (1982) ED Pa 537 F Supp 777.

397 The evidentiary burden in SA law: see ch 3 par 3.3.3.5 *supra*. See also par A 2.3 *supra* for the position in English law.

398 *Hyder v Weilbaecher* 1981 54 NC App 287 283 SE 2d 426; *Newing v Cheatham* (1975) 15 Cal 3d 351; 124 Cal Rptr 193 540 P 2d 33; Prosser and Keeton 258.

399 *Toussant v Guice* (1982) La App 414 So 2d 850; *Coca-Cola Bottling Co* 1960 239 Miss 759 125 So 2d 537.

400 Prosser and Keeton 259.

401 Prosser and Keeton 681; De Jager 354 *et seq*.

402 The reason why the *res ipsa* doctrine caused such an onerous duty in practice is because the jury, who has to decide on the factual question of the existence of negligence, almost always found for the injured plaintiff: Prosser and Keeton 257; De Jager 354.

2.4 Defences

Two defences may be advanced against a negligence action, a defence of contributory negligence may reduce the plaintiff's claim for damages[403] and a defence of voluntary assumption of risk may defeat an action against the producers and users of ES's where harm was caused by the use of a defective system as well as by the incorrect use of a system.

2.5 Publisher's liability

2.5.1 Definition

The analogy between ES's and informative publications points to the possibility of another cause of action against the producers, namely that of publisher's liability, which is based on misrepresentation. According to Lamkin,[404] there is an obvious similarity between ES's and informative books and manuals, especially "how to" books which are acquired for the information they contain. An action in tort would lie against publishers for injuries caused by false information in their publications. Such liability has already been found by American courts in cases relating to aeronautical charts.[405]

2.5.2 Negligent misrepresentation

Negligent misrepresentation as a form of misconduct has frequently been accepted by the courts as a cause of action for personal injuries and property damage.[406]

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403 *Li v Yellow Cab* (1975) 13 Cal 3d 804; 532 P 2d 1226.

404 1994 *ELJ* 757.

405 See par 2.5.3 *supra*.

406 Prosser and Keeton 745.

A problem arises though in cases where only economic loss is sustained because of such a misrepresentation. The courts became alarmed at the possibility of indeterminate unlimited liability[407] and developed a restrictive rule in the form of a limitation of the group of persons to whom the defendant is liable. In the landmark case *Ultramares Corp.v Touche*[408] Cardozo CJ held that "one is liable for negligent misrepresentation only to those with whom one is in privity or to third parties actually known to be beneficiaries of the representations...."[409] In the light of this limitation it is unlikely that publishers will be liable to their readers for injuries caused by inaccurate information contained in publications as they are generally not in privity with the publisher nor are they actually known to them.[410]

Liability may lie under section 552 of the Restatement (Second) of Torts:

> **Information Negligently Supplied for the Guidance of Others**
>
> (1) One who, in the course of his business, profession or employment, or in any other transaction in which he has a pecuniary interest, supplies false information for the guidance of others in their business transactions, is subject to liability for pecuniary loss caused to them by their justifiable reliance upon the information, if he fails to exercise reasonable care or competence in obtaining or communicating the information.

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407 The following *dictum* of Cardozo CJ in *Ultramares Corp. v Touche* (1931) 255 NY 170; 174 NE 441 gave birth to this fear:

> If liability for negligence exists, a thoughtless slip or blunder, the failure to detect a theft or forgery beneath the cover of deceptive entries, may expose accountants to a liability in an indeterminate amount for an indeterminate time to an indeterminate class. The hazards of a business conducted on these terms are so extreme that as to enkindle doubt whether a flaw may not exist in the implication of a duty that exposes to these consequences.

408 *Supra*.

409 174 NE 448.

410 Lamkin 1994 *ELJ* 758.

> (2) Except as stated in Subsection (3), the liability stated in Subsection (1) is limited to loss suffered
>
> (a) by the person or one of a limited group of persons for whose benefit and guidance he intends to supply the information or knows that the recipient intends to supply it; and
>
> (b) through reliance upon it in a transaction that he intends the information to influence or knows that the recipient so intends or in a similar transaction.

Liability in terms of section 552 is limited to an identifiable person or at least a small group of people for whose benefit or guidance the representation is intended.[411] Although there are cases which have held that a member of public does not have a cause of action under negligent misrepresentation against a publisher, it is suggested by Lamkin[412] that such a cause of action does exist under section 552:

> Under these criteria, publishers who have a reasonably narrow and distinct class of readers will not escape liability merely because of their status as a publication. At the same time, publications directed at a more general audience, which would be severely constrained if they were held liable to a wide and diverse audience, will not be so charged.

Similarly, a supplier of information, such as the producer of a professional ES, may be held liable to a limited, identifiable class of professional users for whom the information is specifically intended. Lamkin[413] admits though that the class of patients receiving advice from the physicians using the ES's will probably be too broad in terms of the Restatement.

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411 Prosser and Keeton 747.

412 1994 *ELJ* 759-760.

413 1994 *ELJ* 760.

2.5.3 Misrepresentation leading to strict liability

In *Cardozo v True*[414] the defendant purchased a cookbook of exotic recipes using tropical ingredients. One of the ingredients was the Dasheen plant, which while safe for consumption when cooked, is poisonous when eaten raw. The defendant became very ill after she ate a piece of the raw plant and she brought an action for damages against the seller of the book because of *inter alia*, a violation of an implied warranty under the UCC.[415] The court found that the implied warranty was limited to the physical characteristics only, such as the binding and the printing, and not to the information contained within.[416] Although the situation in *Cardozo* pertained to parties bound in a contract, the decision was followed in similar situations permitting recovery on a warranty theory without regard to privity in contract.[417] It seems that, in these cases, the distinction between contract and tort becomes blurred and strict liability is imposed.[418]

In the case of *Winter v GP Putnam's Sons*[419] the plaintiffs gathered and ate mushrooms using their purchased copy of The Encyclopedia of Mushrooms, published by the defendant, as their guide. Relying on descriptions in the book they ate some poisonous mushrooms after which they became so ill that they required liver transplants. The court held that the publishers did not have a duty to verify the accuracy of information in their books and were not liable for injuries resulting from erroneous information and stated that "(t)he purposes served by products liability..... are focused on the tangible world and do not take into consideration the unique

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414 *Supra.*

415 See ch 3 par 2.6.2 *supra.*

416 *Supra* 1056.

417 Prosser and Keeton 749 and the authorities cited there in fn 86.

418 *Ibid.*

419 (1991) 938 F 2d 1033 (9th Cir).

characteristics of ideas and expression."[420] The argument of the plaintiff that the mushroom guide should be analogised to aeronautical charts and therefore found to be a product subjected to strict liability,[421] was rejected by the court. The reason for this is that in contrast to the guide, aeronautical charts are highly technical tools. Lamkin argues that MES's are definitely "highly technical tools" due to the significant amounts of time, money and expertise they require to develop and the fact that they can only be used effectively by trained professionals.

The unreported case of *Carter v Rand McNally & Co*[422] offers better authority for the liability of ES producers based on publisher's liability. In this case a teenage girl was severely injured with a burner and alcohol while performing a science experiment, described in a textbook published by the defendant. The plaintiff claimed *inter alia* that the publishers "...failed to use due care in designing the experiments and adequately warn about the dangers to the experiments..."[423] The court found the defendant liable for the plaintiff's injuries and held that in the case of a product such as a book which has the primary purpose of the conveyance of information that is potentially dangerous if improperly communicated, the physical book and its contents must be regarded as an entity.

First Amendment concerns

American courts have been reluctant to find for damages based on publisher's liability because of the threat to the right to free speech contained in the First Amendment to the American Constitution.[424] In *South Carolina State Ports Authority v Booz-*

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420 *Supra* 1034.

421 See par 1.2 *supra*.

422 No 76-1864-F (D Mass) cited by Lamkin 1994 *ELJ* 763 fn 153.

423 Lamkin 1994 *ELJ* 764.

424 See ch 4 par 6.3.1 *supra*.

Allen & Hamilton, Inc,[425] a government agency of Carolina commissioned the defendant to prepare a report on certain findings after which it claimed the report contained inaccuracies which led to actual economic loss being suffered by the plaintiff. In defense of a subsequent claim by the plaintiff, the defendant argued that the First Amendment protected it from liability.[426] The court rejected the defense as it found the report to consist of objective factual data which does not warrant the protection of the First Amendment.[427] The holding in the *South Carolina* decision[428] can easily be transposed to MES's, as the data contained in the knowledge base of a MES also consists of objective and verifiable facts acquired from the corpus of medical knowledge and consequently does not need any First Amendment protection.[429] The very nature of an ES also negates First Amendment concerns. In contrast to cases where a newspaper article is suppressed, the suppression of an ES will not have the effect that society is deprived of its rightful knowledge, as ES's are merely a compilation in a more accessible and available form of expert knowledge that already exists and is accessible.[430]

3. Strict liability

3.1 Vicarious liability

An employer is liable, regardless of fault, for the torts of her employees or servants

425 (1987) 676 F Supp 346 (DDC).

426 *Supra* 347.

427 *Supra* 349. The court noted that the defendant's report consisted of "objective factual data" which does not need First Amendment protection "because of the greater objectivity and hardiness of commercial speech".

428 *Supra*.

429 Lamkin 1994 *ELJ* 766.

430 *Ibid*.

committed in the course of their employment.[431] Justification for vicarious liability is a rule of policy whereby employers are viewed as better able to absorb and distribute such losses, together with the argument that strict liability of an employer renders a greater incentive to carefully select, instruct and supervise servants and to take every precaution in seeing that the enterprise is conducted safely.[432] Whether a person is an employer is determined according to the control test which includes the right to control.[433] The employer is only liable for torts committed by the employer within the scope of employment which refers to those acts so closely connected to with what the employee is employed to do, that they may be regarded as methods of carrying out the objectives of employment.[434] Conduct of independent contractors is not subject to vicarious liability. This general rule of non-liability is subjected to so many exceptions that Prosser and Keeton[435] doubts the validity thereof. Apart from vicarious liability, the employer may also incur personal liability for any negligence of her own in connection with the work to be done as she is required to exercise reasonable care in selecting a competent and experienced contractor.[436] The employer also has a duty to inspect the work after it is completed to ensure that it is safe.[437] The courts have also found in certain cases that the employer has a non-delegable duty, and consequently held such a defendant vicariously liable for the negligence of an independent contractor although the

431 Fleming (1) 189; Prosser and Keeton 501.

432 Prosser and Keeton 500-501.

433 *Peeples v Kawasaki Heavy Industries Limited* (1979) 288 Or 143 603 P 2d 765.

434 Prosser and Keeton 502.

435 At 509-516.

436 *United States v Arez* (1981) 248 Ga 19 280 SE 2d 345; *Deitz v Jackson* (1982) 57 NC App 275 291 SE 2d 282.

437 Prosser and Keeton 510.

employer herself has done everything reasonably required of her.[438] An example is the liability of a landowner for negligent injuries caused as a result of inefficient repairs by an independent contractor.[439] The criterion which is used to determine whether a duty is non-delegable or not, is whether the responsibility is of such an important nature to the community that the employer should not be permitted to transfer it to another.[440]

3.2 Products liability

3.2.1 General

American law has made a cardinal contribution to tort theory with the development of strict liability for defective products.[441] It provided the model for the EU Directive on Product Liability,[442] which is now in force throughout all European member countries.[443] It evolved by means of an extension of guarantees of quality implied in the sale of goods between the buyer and seller, to the relationship between the manufacturer and consumer as well.[444] As recovery between buyer and seller was based on strict or negligence liability in contract for breach of warranty and governed exclusively by the UCC in all states, the continuing extension of the UCC into tort law became cumbersome and inefficient.[445] It was realised that the imposition of strict

438 See the numerous cases cited by Prosser and Keeton 511 especially footnotes 23-41.

439 *Lineaweaver v John Wanamaker Philadelphia* 1930 299 Pa 45; 149 A 91.

440 Prosser and Keeton 512.

441 Fleming (1) 190.

442 85/374.

443 See ch 5 part II par 8 *infra*.

444 Fleming(1) 190; Prosser and Keeton 692.

445 Prosser and Keeton 692.

liability on manufacturers and sellers for physical harm to persons and things was rather based on the policy consideration that the defendant ought to be liable for damaging events caused by defects that made the product more dangerous than it would otherwise be, than on conventional contract notions.[446] The courts began to apply strict liability theory in tort almost simultaneously with the adoption of Section 402A of the Second Restatement of Torts by the American Law Institute in 1964, after which it was applied throughout the country.[447] The initial focus on manufacturing defects has by now spilled over to design defects and a failure to warn on the part of the manufacturer. The only requirement is that the product must be unreasonably defective and dangerous. Claims are frequently being redressed by large awards of punitive damages to compensate for a conscious indifference to the safety of the public and also taking account of the corporate defendant's wealth.[448] The defining of a test for what is defective remains a problem. The consumer-expectation test is more meaningful to the buyer than to the third parties who are frequently among the injured; the test is often supplemented by balancing the risk of damage caused by the product against the utility of the design of the product. The product is also deemed to be defective if a prudent manufacturer, knowing of the risk, would not have marketed it. Strict liability covers personal injury and damage to other property than the defective product itself; damage to the defective product itself and economic loss is generally claimed in terms of the contract between the buyer and seller.[449]

The decision to subject the manufacturer and other suppliers of a product to strict

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446 *Ibid.*

447 Prosser and Keeton 694.

448 Fleming (1) 190; Cole 1990 *CLJ* 158; Prosser and Keeton 692 *et seq.*

449 Restatement (Second) of Torts par 402A; Fleming(1) 190; Prosser and Keeton 678. The ALI has released a tentative draft of the Restatement (Third) of the Law of Torts in which the area of products liability has been reconsidered: ALI (24 July 1997) Available www: http://www.ali.org/ali/Tortpl.htm.

liability is a matter of public policy.[450] Although the distinction between products and services is of primary importance, policy concerns such as loss-spreading, compensation, equitable allocation of the burden of proof, the encouragement of new technological developments and the prevention of accidents are consciously furthered by the courts when imposing strict liability.[451] Strict liability is the most advantageous theory for a plaintiff since only causation and resulting damages need to be proved, not that a duty of care was owed by the defendant.[452] Commentators are divided as to whether strict liability should be imposed on computer programs causing physical injury.[453]

3.2.2 Elements of product liability

Section 402(A) of the Restatement(Second) of Torts provides:

> **Special Liability of Seller of Product for Physical Harm to User or Consumer**
>
> (1) One who sells any product in a defective condition unreasonably dangerous to the user or consumer or to his property is subject to liability for physical harm thereby caused to the ultimate user or consumer, or to his property, if
>
> (a) the seller is engaged in the business of selling such a product; and

450 Fleming(1) 191; Cole 1990 *CLJ* 174.

451 *Ibid.* Prosser and Keeton 692 extracts three basic ideas from the various policy considerations advanced for the imposition of strict liability in tort: (1) the costs of damaging events due to defective products can best be borne by their manufacturers (a risk-bearing theory), (2) accident prevention can be promoted by the adoption of strict liability and the elimination of the necessity of proof of negligence, (3) even if fault or negligence is the primary justification for product liability, proof thereof should no longer be required because of the difficulty and high cost of doing so.

452 Lamkin 1994 *ELJ* 740.

453 Proponents of strict liability are Gill 1986 *HTLJ* 484; Schmal 1992 *LT* 1-12; Birnbaum 1988 *CLJ* 156, whereas opponents include Cole 1990 *CLJ* 182-184; Turley 1988 *CLJ* 475-476.

(b) it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold.

(2) The rule stated in Subsection (1) applies although

(a) the seller has exercised all possible care in the preparation and sale of his product, and

(b) the user or consumer has not bought the product from or entered into any contractual relation with the seller.

3.2.2.1 Product

Any kind of product that is sold is protected as long as it is in a defective condition and unreasonably dangerous.[454] In this requirement lies the main difference between strict liability and negligent liability for products in tort.

3.2.2.2 Defect

A product is defective if it is unreasonably dangerous due to
(1) a flaw in the product present at the time it is sold; (2) a failure to warn about an inherent risk; and (3) a design defect.[455]

3.2.2.3 Producer

The producer is a seller including the manufacturer and all those in the marketing and distribution chain subsequent to the manufacture-seller. A seller must, however, be a merchant in the business of selling, and not for example, a housewife.[456] The manufacturer of a component part that contains a flaw is strictly liable as producer except where the defect lies in the manner of its use in an assembled product,

454 Prosser and Keeton 695.

455 Prosser and Keeton 694-695.

456 Prosser and Keeton 705.

whereupon the manufacturer of the assembled product is held strictly liable as the producer.[457] Retailers and wholesalers are strictly liable for the defective products they sell.[458] Endorsers, licensors and franchisees are generally not held strictly liable for the defective products they sell as the products are not sold under their trade name. However, the courts have not yet announced settled principles for determining such liabilities.[459]

3.2.2.4 Damage

Only physical harm to persons or property is compensable in terms of section 402(A); economic and commercial losses are not recoverable in terms of strict liability.[460] Furthermore, because liability for personal injuries and physical damage to property is based on policy considerations, the duty to avoid such harm is imposed by law and cannot be excluded in a contractual provision.[461] Damage to the defective product itself is recoverable on the basis of strict liability but may be excluded in negotiated disclaimers.[462]

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457 Prosser and Keeton 705-706.

458 Their liability on a strict basis is supported by various policy reasons such as their more favourable position to bear the costs of accidents due to the defectively dangerous products they sell, than the purchaser for use, and the goal of accident prevention which is best served by the imposition of strict liability on the retailer. *Cf* Prosser and Keeton 704-707.

459 Prosser and Keeton 707.

460 Such losses are only recoverable in contract: Prosser and Keeton 708.

461 Prosse and Keeton 708; see also ch 3 par 2.6.1 2 *supra*.

462 *Keystone Aeronautics Corp v RJ Enstrom Corp* (1974) 499 F 2d 146 (3rd Cir).

3.2.2.5 Causation

The product defect must be the proximate cause of the plaintiff's injury.[463]

3.2.3 Defences

Contributory negligence and voluntary assumption of risk were abolished by the courts as defences to a claim based on strict liability.[464] The reason is because the doctrine of comparative negligence, whereby contributory negligence only diminishes and does not bar recovery from the plaintiff, developed after the new tort action of products liability and the courts were still following the all-or-nothing doctrines of common law.[465] With the current development of a comparative fault system, most states are adopting legislation in which contributory negligence is recognised as a defence that diminishes recovery in proportion to the plaintiff's fault.[466] The following defences against a claim based on products liability have been recognised by the courts: misuse of a kind which is not reasonably foreseeable, voluntary and unreasonable negligent use knowing of the defective condition and appreciating its dangers. Both these defences are regarded as intervening conduct constituting a superseding cause.[467] The state-of-the-art defence is acknowledged by some courts, provided reasonable care was exercised and the risk was completely undiscoverable at the time the product was put on the market.[468]

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463 Prosser and Keeton 712. See also par 3.2.2.6 *infra* with regard to the defences of misuse that constitute a superseding cause.

464 *McCown v International Harvester Co* (1975) 463 PA 13 342 A 2d 381; *Cepeda v Cumberland Engineering Co* (1978) 76 NJ 152 386 A 2d 816.

465 Prosser and Keeton 710-712.

466 Eg the Uniform Comparative Fault Act of 1978: see Prosser and Keeton 712.

467 *Johnson v Clark Equipment Co* (1976) 274 Or 403 547 P 2d 132.

468 Prosser and Keeton 700.

3.2.4 Summary

Although there have not been any software liability cases adjudicated in terms of no-fault liability, it is believed that the courts will have no difficulty to impose strict liability on software causing physical injury, provided all the elements of strict liability are present. This means that only standard, mass produced and - marketed software will qualify in terms of the policy issues outlined earlier.

The basic elements of a products liability cause of action applied to ES's are: (a) the ES must be a product; (b) the defendant must be a seller of the ES; (c) the ES must reach the injured party without substantive alteration; (d) the ES must be defective; and (e) the defect must be the source of the injury.

(a) The ES must be a product

As stated previously,[469] the most important question in a product liability analysis is whether an ES can be regarded as a product or a service because section 402A only applies to products. It may be accepted that in the case of a corporeal commercial product such as a motor car there is clearly a tangible product and in the case of a haircut, there is clearly a service being rendered. Problems arise in cases where this distinction becomes blurred as in the case of a service that produces an end-product as well. In the case of custom or bespoke software where a software development contract has been entered, a service is procured to produce a product, namely the ES. In such cases the courts consider secondary factors, such as the type of defect in the product and the commercial distinction between products, to come to a finding.[470] Manufacturing defects and mass produced systems generally indicate a product, whereas design defects under a development contract are usually found in a service.

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469 Ch 3 par 2.6.1.1 *supra*.

470 Lamkin 1994 *ELJ* 742.

According to Cole[471], the ES as a product must be interpreted within the context of its defined environment. This means that the developer of the ES can only be held liable for the output of the ES as it represents knowledge in the domain for which it is designed. The developer cannot be held liable to all third parties for the various meanings attached to it outside the domain. The ES together with its actions within its domain, but independent from the meaning of the action external to its domain, is the "product". This can be illustrated by the case of *Cardozo v True*[472] where the court found that a bookseller was not liable to a cookbook purchaser who was poisoned because there was no indication in the recipe that an ingredient is poisonous if left uncooked. The bookseller, unlike the author, was not selling the information for application - the product's context was a book rather than as a recipe to be used. For the same reason Cole[473] is of the opinion that a MES used as a tool by a doctor,[474] cannot qualify as a product with regard to liability towards the patient seeking advice and a course of treatment. Such a MES is limited to the specific narrow domain where the interpretation intended represents knowledge within that domain and not within the domain of final medical judgement towards any individual. The position would be different in the case of a MES intended to be used directly by the patient at home[475]: the intended knowledge would then very well be within the domain of final medical judgement for which product liability may be incurred towards an injured user-patient.

(b) The defendant must be a seller of the ES

Individually designed and constructed ES's do not fall within the meaning of "sell" for

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471 1990 *CLJ* 160-161.

472 (1977) 342 So 2d 1053 (Fla Dist Ct App).

473 1990 *CLJ* 162.

474 An ES of the type embodied in the Intelligent Assistant: see ch 2 par 11 *supra*.

475 An ES of the type embodied by the Self-Help System: see ch 2 par 11 *supra*.

purposes of product liability due to the lack of a mass market.[476] The sale of ES shells[477] must not be confused with the ES application itself. ES shells are part of the application-building tools and their manufacturers are not the manufacturers of the ES product.

(c) The ES must reach the user without substantial alteration

The nature of software is to transform an input into an output. This characteristic creates two theoretical questions, namely (1) is the input supplied to the ES by the user a substantial alteration, and (2) in the case of an ES constructed with the ability to learn and modify itself, when is the reasoning process so changed that a substantial alteration took place?

In regard to the first question, Cole[478] remarks that because input errors are inevitable, the developer cannot be held liable for all consequences of the program and the user has a duty to constrain inputs to the specified domain in which the ES operates. The absence of techniques used to prevent input errors such as reconfirmation by the user, provisional reasoning by the program and error tracing may be unreasonable and therefore result in the liability of the producer although substantial alteration took place.[479] In respect of the second question, substantial alteration would take place when the user extends the knowledge base of the ES. This is especially possible in ES's capable of learning.[480] If the user is aware of this possibility and actually acquired the ES for that very reason, a product liability cause

476 Cole 1990 *CLJ* 164.

477 See ch 2 par 8.1.3 *supra*.

478 1990 *CLJ* 165.

479 Cole 1990 *CLJ* 166. If the user makes an inaccurate input, the seller has an *estoppel* defence: *Swiss Air Transport Co v Benn* (1983) 121 Misc 2d 129 133-34; 467 NYS 2d 341 344-45 (NY Civ Ct).

480 See ch 2 par 3.4 *supra*.

of action will not arise.

(d) The ES must be defective

The criteria used to evaluate a product has been stated as follows:

> This evaluation of the product in terms of the reasonable expectations of the ordinary consumer allows the trier of fact to take into account the intrinsic nature of the product. The purchaser of a Volkswagen cannot reasonably expect the same degree of safety as would the buyer of the much more expensive Cadillac. It must be borne in mind that we are dealing with a relative, not an absolute concept. In determining the reasonable expectations of the ordinary consumer, a number of factors must be considered. The relative cost of the product, the gravity of the potential harm from the claimed defect and the cost and feasibility of eliminating or minimizing the risk may be relevant in a particular case. In other instances the nature of the product or the nature of the claimed defect make other factors relevant to the issue.[481]

As shown before,[482] a defect causing injury can arise from many parts of an ES such as the knowledge base, inference mechanism, interaction language, etcetera.[483] The reasonableness of design and defects must be determined with reference to the time of product design and not the time an injury occurs.[484] The ES may be of such a nature that failures are inevitable for example a medical ES designed to effect a cure as there is no guarantee of any cure in medicine.[485] Other examples can be found in the field of drugs, which, in the present state of knowledge, cannot be made safe for intended and ordinary use.[486] Conversely, if

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481 *Seattle-First National Bank v Tabert* (1975) 86 Wash 2d 145 154; 542 P 2d 774 779.

482 See ch 2 par 9.2.1 *supra*.

483 See also appendix III for the tables of design and execution risk areas.

484 *Ward v Hobart Manufacturing Co* (1971) 450 F 2d 1176 (5th Cir).

485 Cole 1990 *CLJ* 169.

486 Comment (k) to the Restatement(Second) of Torts s 402(a).

the ES operates in a predetermined environment such as a tax advisor for a certain year, the expectations can be defined more accurately. Decisions as to which domains for ES's are unsafe will be determined by juries.

(e) The ES's defect must be the source of the injury

Cole states that strict products liability should not be invoked for recovery of pure economic loss as developers of ES's cannot be expected to anticipate all possible commercial expectations for all potential interpretations of the system's output.[487]

4. Conclusion

In terms of the policy factors considered when determining the nature of a particular object for purposes of tortious liability, the following classification can be made with regard to the three types of ES's identified in this study:

The Intelligent Assistant is an interactive ES produced for a professional user to be used as a tool or decision-aid in the execution of her professional duties.[488] As such it is an information product applied with the intervention of a human user to produce a service. This type of ES will be viewed as a service subjected to a negligence standard of liability even though the system may be mass produced and -marketed. If the ES is custom made and it entails the delivery of a product, it will still be regarded as a service due to the manner of acquisition and the intervention of the user. In many instances this type of ES would have been produced in conjunction with the user which makes it even more akin to the rendering of a service.

The Self-Help System is produced for direct use by a non-professional user for advice

487 *Professional Lens Plan v Polaris Leasing Corp* (1984) 234 Kan 742 755; 675 P 2d 887 898-99; Cole 1990 *CLJ* 173.

488 See ch 2 par 11 *supra*.

or help in any matter.[489] If the ES is mass produced and -marketed it is a product to which strict liability principles apply even though it provides a service akin to a professional service. The fact that the ES replaces the human professional entirely, has the result of providing a product, consisting of information, which is relied upon without human intervention.[490]

The ES Machine which operates a machine directly without the intervention of a human user is considered to be a product for strict liability purposes if it is mass produced. If it is a one-of-a-kind application, Turley[491] advises that it be treated as a service subjected to negligence liability.

4.1 The use of a defective expert system

Plaintiffs will have a difficult time in asserting a traditional tort claim against the producer of defective systems since a "computer malpractice" claim is not available at this stage of development of the ES industry.[492] If ES developers are held to an elevated standard of care it would increase the cost of ES's and restrict the development of a new and growing technology. The same policy condideration applies to strict liability. An action based on strict products liability is available to the injured party in case of damage caused by the use of an ES that is a product in terms of the principles set out above.[493] A cause of action against the producers of ES's with an intellectual output may lie in publisher's liability which is based on strict liability in analogy to the decisions concerning publications where the information

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489 See ch 2 par 11 *supra*.

490 See par 2.2 *supra*. This conclusion concurs with Westerdijk's argument regarding decision directing (*beslissingssturend)* software which, because of the absence of an intervening user, he views as a product: see part II par 9.2.3 *infra*.

491 1988 *CLJ* 463.

492 See par 2.2.2.3 *supra*.

493 See par 3.2 *supra*.

conveyed, rather than the physical product itself, constitutes the main value of the product.[494] A further cause of action may also be found in the tort of negligent misrepresentation, although such actions may be limited to those in privity with the information provider and will be limited in jurisdictions that follow the *Ultramares* decision[495] approach.

4.2 The incorrect use of a sound expert system

Against the users of ES's a plaintiff will have the traditional tort claim based on negligence, which in the case of a professional user will be in the form of a professional malpractice claim. In certain instances there may also be valid policy reasons to assert a strict liability claim for services rendered.

4.3 The non-use of an expert system

As in the case of the incorrect use of ES's, injured parties will also have a claim based on negligence against the user who fails to use an ES in circumstances where such failure constitutes a breach of duty.[496] The existence of a duty of care is determined according to the foreseeability of harm and legal policy.[497] If the loss suffered consists of physical injury and damage to property, the claim will readily succeed but pure economic loss is only recoverable between parties in contract and towards third parties of a limited, identifiable class.[498]

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494 See par 2.5 *supra*.

495 *Supra*.

496 See par 2.2.1 *supra*.

497 See par 2.2.1 *supra*.

498 See pars 2.5.2 and 2.2.4 *supra*.

CHAPTER 5

PART II: EUROPEAN UNION LAW

1. Introduction

European Union (EU) law refers to a body of law applicable to and binding[1] on the member states of the EU[2] which has been developed to harmonise[3] European law in general.[4] The inclusion of a discussion of EU law in this study is necessitated by the fact that the delictual liability regimes of the two Continental legal systems as well as one of the Anglo-American legal systems that are treated here are those of three member states of the EU.[5] The harmonisation of European law has led to the inevitable reception of EU law in various areas of the legal systems of all the member states, and thus it becomes part of the legal rules of those systems. In all of the member states, EU law forms part of the continuing strategy aimed at the formation

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1 See par 6.1 *infra* with regard to the binding effect of EU law on member states and individuals. It is also possible that non-member states who are parties to international trade or other agreements with the EU (such as the Lomé Convention with African countries) are bound by some provisions of EU law in terms of their agreements: *Cf* Steiner 5 *et seq*; Halberstam 1994 *DR* 781. In this way even South Africa may become bound by the provisions of EU law upon becoming a trading partner of the EU: see par 2 *infra*.

2 The European Union (EU) was previously referred to as the European Community (EC). Since the signing of the Maastricht Treaty on the European Union in 1991, the term EC was substituted by EU: De Vos 1994 (1) *TSAR* 2. References to the EU Treaty are actually references to the original Rome or EC Treaty that forms the basis of the Maastricht Treaty (EU Treaty).

3 Harmonisation is also referred to as "approximation" and *rapprochement* in French: De Vos 1994 (1) *TSAR* 2.

4 On the EU in general, see De Vos 1-13; Jacobs *et al* 2-11; Weatherhill and Beaumont 1-23; Shaw 13-17; Steiner 3-23.

5 **The Netherlands** and **Germany** were among the original six member states who founded the EU in 1957 with the signing of the Rome Treaty, the **United Kingdom** joined the EU in 1973 upon signing the Treaty of Accession: see par 2 *infra*.

of a "common market"[6] in which the elimination of economic and legal barriers that inhibit the free transfer of goods across national borders, and the adoption of measures to create equal opportunities for competitiveness within the EU for businesses belonging to the different member states, is pursued.[7]

During 1985 the EU adopted a directive on product liability[8] for subsequent implementation into the national law of the member states.[9] The consequences of this EU Directive have been much more significant than merely constituting a uniform product liability regime for the EU: it has also served as a model for many other countries trading with the EU, including the European Free Trade Association (EFTA) states, Hungary and Russia.[10] The EU Directive introduces **strict liability** for the producers of defective products that cause personal injury, death or damage to personal property.[11] Each member state is required to pass legislation to provide for the implementation of the EU Directive in their national law which will establish a

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6 The common market is a market in which everybody is free to work, invest, produce, buy and sell wherever in the member states the conditions for such activities, which may not be artificially distorted by subsidies or legislative or other state or business practices, are most favourable: Mathewson 1993 *L&PIB* 1285.

7 The principle of freedom of movement of goods is the fundamental freedom, the "corner-stone" of the EU. The law relating to the free movement of goods is one of the principal pillars of the common market. In terms of the EU Treaty it applies to all products which are in free circulation in member states, whether they originate in member states or in third countries, for example countries which are parties to the Federal Trade Agreement: Steiner 70.

8 **EU Council Directive 85/374 on the Approximation of the Laws, Regulations and Administrative Provisions of the member States concerning Liability for Defective Products**, hereafter the " EU Directive". See appendix VI for the full text of the EU Directive. The enactment of a strict product liability regime was inspired by the development of such liability in the USA: see part I par B 3.2 *supra*.

9 See par 8.1 *infra* on the process of implementation followed in member states.

10 Hoffman and Hill-Arning 3.

11 See par 8 *infra*.

uniform products liability regime within the EU.[12] However, member states are permitted a discretion with regard to three of the EU Directive's provisions.[13] Before the regime is adopted by a member state, the question of whether the EU Directive is binding on public or private parties depends on whether the provisions are "directly effective" or not, as directly effective EU law must be applied by domestic courts.[14] Once the EU regime is adopted, the plaintiff has a choice to institute action in terms of the new regime, or in terms of the traditional product liability principles of the relevant country as the EU Directive confers an **additional** regime of product liability that co-exists with the delictual liability regime of the national law of the member states.[15]

The importance of this legislation for the commercial world and consumer sales is obvious and with the proliferation of computer products in the home and business, the potential application of strict product liability rules to defective software in general and ES's in particular, has become an important subject to consider in the production and marketing of computer products and services.[16] ES's deserve exceptional attention

12 Because of the diverging standards of the member states regarding the definition of a defective product, the extent of liability, responsible parties and burdens of proof in litigation, businesses trading in the EU have found it extremely difficult to discover the degree of care required of them, and to determine their exposure to liability when manufacturing and marketing products. Hence, the Commission of the EU proposed a harmonisation of member state product liability laws as early as July 1976: Mathewson 1993 *L&PIB* 1286; Westerdijk 43.

13 Arts 15 and 16 of the EU Directive: see par 8.4 *infra*.

14 The principle of "direct effectiveness" is of crucial importance to EU lawyers as directly effective provisions of EU law must not only be applied by domestic courts, but also enjoy priority over any conflicting provisions of national law in terms of the **principle of supremacy of EU law**: Steiner 25. See par 6 *infra*.

15 Art 13. Triaille 1993 *CLSR* 215 sees this retention of other legal instruments as a clear indication that the main objective of the EU Directive is the protection of consumers and not the harmonisation of laws. Therefore software should be included in the definition of product because to do so would benefit consumers: see par 9 *infra*.

16 Davies 1993 *CL&P* 99.

in this regard because due to their very nature, ES's are more likely than conventional software to cause personal and property injury.[17] ES's are frequently used in application areas such as medical assistance apparatus, transportation control, and safety related products in which a much higher potential exists for those injuries provided for in the EU Directive,[18] than in the case of conventional data processing software used in application areas such as home and office management, and pure information retrieval systems.[19] An injured user of software who does not have to prove the negligence of the producer of defective software has a distinct advantage over the user that has to prove that the producer was at fault when producing the software. Consequently, the question arises whether the EU Directive applies to software.[20] With regard to the existence of a cause of action in case of damage caused by the use of an ES, it must further be ascertained whether ES software falls within the definition of a "product". If it does, ES producers may be held strictly liable for damage caused by a defective ES in certain instances. Furthermore, this liability may not be contractually excluded.[21] In the context of the ES bases of liability treated in this study, the current discussion pertains only to liability issues arising from the "use of a defective ES", and not to liability issues arising from the "incorrect use of a sound ES or the non-use of an existing (sound) ES".[22]

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17 See ch 2 par 5 *supra*.

18 In terms of art 9 of the EU Directive, the damage recoverable is limited to death, personal injury and damage to personal property caused by the defective product.

19 See ch 2 par 4 *supra*.

20 The EU Directive is only applicable to "products": see par 8.3.2 *infra*. On the applicability of the EU Directive to software in general, see Davies 1993 *CL&P* 99-103; Whittaker 1989 *LQR* 125-139; Triaille 1991 *CL&P* 217-224 and 1993 *CLSR* 214-223; Stuurman 127-147; Heussen 48 (2).

21 Art 12: see par 8.3.7 *infra*.

22 In the latter two instances, the ES's do not qualify as defective products: see ch 1 par 1.4 *supra* with regard to the scope of "use of an ES".

2. Historical background to the EU

The EU originated from the institution of the European Economic Community (EEC) or the "Common Market" as it was also known during the "reconstruction and development" - era in Western Europe after the second World War.[23] The EEC came into existence with the Treaty of Rome (EC Treaty) in 1957 and consisted of only two institutions, namely the (European) Parliament and the (European) Court of Justice (ECJ). The six original member States were France, Germany, Belgium, Italy, the Netherlands and Luxembourg.[24] Another two institutions, namely the Commission and the Council were formed with the signing of the Merger Treaty in 1965.[25] The United Kingdom, Denmark and the Republic of Ireland joined the EU with the Treaty of Accession in 1973, followed by Greece in 1979 and Spain and Portugal in 1986. It became evident that there were still many barriers to a single internal market, and to banish these, a new Treaty, the Single European Act (SEA), was signed by the twelve member states during 1986.[26] A growing movement towards a more united EU ensued, and in December 1991 the Treaty on the EU was signed at Maastricht.

The new EU Treaty enlarged the scope of EU competence and pledged the member states to full economic and monetary union as well as to the development of a common foreign and security policy which would eventually lead to a common defence policy. In terms of the EU Treaty, the power to adopt legislation remains with the member states except in cases where the objectives of the action, by reason of

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23 On the history of the EU in general, see Weatherhill and Beaumont 1-35; Shaw 21-44; Steiner 1-6; Lasok and Bridge 1-28.

24 Steiner 3.

25 In terms of this Treaty, the European Coal and Steel Community (ECSC) merged with the EEC and the European Atomic Energy Commission (Eurotom): Steiner 4.

26 This was to be achieved through a huge program of harmonisation, especially with regard to the provisions relating to the free movement of goods which is the corner-stone of the EU: Steiner 69.

its scale or effects, can be better achieved by the EU.[27] Although an express "federal" goal was not included in the final draft of the EU Treaty, the aims[28] of the EU Treaty do signify a move towards a federal system.[29]

The focus on economic aspects shifted gradually to include areas of social importance as well, hence the designation of "European Community (EC)", now the EU. Apart from the purpose of striving for a closer union between the people of Europe, the reasons for its establishment were firstly, to reconcile former enemies and provide a framework for stability, and secondly, to manage the growing interdependence of the European economies.[30] The general aims of the original EC Treaty have been amended by the EU Treaty to provide for the extended objectives of the SEA:[31]

> The Community shall have as its task, by establishing a common market and an economic and monetary union and by implementing the common policies or activities referred to in Articles 3[32] and 3a[33],to promote throughout the Community a harmonious and balanced development of economic activities, sustainable and non-inflationary growth respecting the environment, a high degree of convergence of economic performance, a high level of employment and of social protection, the raising of the standard of living and quality of life, and economic and social cohesion and solidarity among member States.

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27 Art 3b of the EC Treaty. The EU Treaty expressly confirms the principle of "subsidiarity" , which means that the EU only takes action in so far as the objectives of the proposed action cannot be achieved sufficiently by the member states: *cf* Steiner 5 *et seq*.

28 Eg full economic and monetary union and a common defence and security policy.

29 Steiner 5.

30 *Ibid*.

31 Art 2 of the EU Treaty.

32 These policies and activities include: the adoption of a social charter, health protection, consumer protection, civil protection and tourism: Steiner 8.

33 The general aims of economic and monetary union.

The goal is, therefore, a free market ideal comprising a single national market enabling equal economic competition between members without artificial legal barriers such as differences in consumer protection or environmental regulation.[34] Hence the necessity of harmonising or approximating the different laws applicable to the same subject.[35]

The idea of a free internal market within the EU and closer union between its members has led to a growing demand among other European States to either join, or seek special trading relationships with the EU.[36] Member states of the EU are Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom.[37] The EFTA countries include Austria, Finland, Iceland, Liechtenstein, Norway, Sweden and Switzerland.[38] South Africa's Department of Trade and Industry is currently involved in negotiations with the EU to conclude a bilateral trade agreement establishing a **free trade area**.[39] If South Africa does become a trading partner of the EU, the applicability of EU law will depend on the provisions in the concluding agreement. Membership of the EFTA entails acquiescence to Union rules[40] and it may be that South Africa, upon becoming a member, will also be bound by the relevant EU law.[41]

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34 Shaw 9.

35 The harmonisation goal has led to numerous policies being adopted by the EU of which the policies concerning "information technology" and "consumer protection" are relevant to the discussion of ES liability: see par 7 *infra*.

36 *Cf* Steiner 6 *et seq;* De Vos 1994 *TSAR* 3.

37 De Vos *ibid* 3; Hoffman and Hill-Arning 9.

38 *Ibid.*

39 Schlesinger 16; Mosia 42; Coetzee 24.

40 Steiner 6.

41 Delport 1992 *SA Merc LJ* 198; Halberstam 1994 *DR* 781.

3. EU law and information technology

EU law is vitally important to the computer and information technology industries as it regulates the ways in which the industries may operate within the EU.[42] Non-compliance with EU law can result in the invalidation of agreements, actions for damages and fines of up to 10% of the group world-wide turnovers of the companies concerned. Since 1980, differences between the laws of member states have been continually eliminated through standardising rules for software protection, product liability and computer contracts. Among the most important initiatives to harmonise information technology law within Europe[43] are the Council Directives on the legal protection of computer programs[44]; the protection of copyright;[45] the protection of individuals with regard to the processing of personal data and free movement of such data;[46] the minimum safety and health requirements for work and display screen equipment;[47] the liability for defective products;[48] general product safety;[49] and standardisation in the field of information technology and telecommunications.[50] The EU Directive on liability for defective products directly concerns the topic of this

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42 See Cowen and Hoeren 302-329 for the ways in which the computer and information technology industries are affected by EU law.

43 See Baxter and Mckenzie 1996 *CLSR* 43-51 for a complete list of existing and proposed EU measures.

44 L122/42 adopted 14 May 1991: Baker and Mckenzie 1996 *CLSR* 44.

45 L290 adopted 29 October 1993: Baker and Mckenzie 1996 *CLSR* 44.

46 L281/31 adopted 24 October 1995: Baker and Mckenzie 1996 *CLSR* 45.

47 L156 adopted 29 May 1990: Baker and Mckenzie 1996 *CLSR* 46.

48 L210/29 adopted 25 July 1985: Baker and Mckenzie 1996 *CLSR* 45.

49 This directive ensures that the responsibility for the marketing of safe products will be placed upon the manufacturers and distributors who will be liable for the damage caused by the products which they market. It is intended to establish, on a Union level, a general safety requirement for any product placed on the market: Davies 1993 *CL&P* 99.

50 L36/31 adopted 22 December 1986: Baker and Mckenzie 1996 *CLSR* 45.

thesis as it may be applicable to ES's that are regarded as products.[51] An EU directive on liability for defective **services** has also been proposed, but since it met with considerable opposition, consensus has not yet been reached on the adoption thereof and discussion among member states continues.[52] The proposed EU Directive may be applicable to ES's that are regarded as services or to services rendered with the aid of an ES.[53] The EU measures on standardisation may also be relevant to the discussion of ES liability as it concerns the Union's commitment to

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51 See par 10 *infra*.

52 *Cf* Baker and Mckenzie 1996 *CLSR* 45; Davies 1993 *CL&P* 101.

The proposal would enable consumers to claim more readily against negligent suppliers of services through shifting the burden of proof so that it would be for the supplier to prove that she had not been negligent instead of for the consumer to prove that negligence had occurred: art 1(2) of the proposed directive.

Art 1(1) reads that "(t)he supplier of a service shall be liable for the damage to the health and physical integrity of persons or the physical integrity of movable or immovable property including the persons or property which were the object of the service, caused by a fault committed by him in the performance of the service."

In terms of art 1(3) the behaviour of the supplier of the service who, in normal and reasonably foreseeable conditions, ensures the safety which may be reasonably expected, will be taken into account when assessing the fault.

Art 1(4) states that "the 'mere' fact that a better service existed or might have existed at the moment of performance or thereafter, shall not constitute fault." In the context of ES liability this would mean that the **non-use** of an existing ES would not necessarily result in the rendering of a defective service: see ch 2 par 9.2.2 *supra*.

53 The proposed directive could affect the supply of software in circumstances where it is considered as a service as well as the provision of consultancy services to the computer industry: Davies 1993 *CL&P* 101. In terms of art 2 a service is defined as:

> any transaction carried out on a commercial basis or by way of a public service and in an independent manner, whether or not in return of payment, which does not have as its direct and exclusive object the manufacture of movable property or the transfer of rights *in rem* or intellectual property rights.

Public services intended to maintain public safety (for example the police), package travel and waste services are excluded. Member states are continually striving to add to the list of exclusions: Davies 1993 *CL&P* 103.

eliminate the legal and technical barriers which force manufacturers to tailor their products to meet the different specifications of the member states and to create a system of EU standards.[54] The United Kingdom, Germany, the Netherlands and France have developed and harmonised an official set of criteria to be used in the independent evaluation and verification of the security of information technology products and systems, namely ITSEC (Information Technology Standards of the European Community). In April 1995 a Council Recommendation was adopted to promote the establishment of international recognition of ITSEC principles.[55]

4. Institutions of the EU

The institutional structure of the EU is *sui generis*.[56] The most accurate way to describe it is a supranational organisation establishing a level of government above that of the member states.[57] Treaty law and secondary legislation emanating from Treaty law create enforceable rights and duties by which the domestic legal systems of member states are penetrated.[58] There is no clear separation of powers between legislative and executive functions and therefore reference to the Treaties must always be made to ensure that the institutions act within their powers.

The EU consists of four institutions,[59] namely Parliament, the Council of Ministers, the Commission and the Court of Justice (ECJ).[60] It is the Commission's task to

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54 Baker and Mckenzie 1996 *CLSR* 50.

55 *Ibid.* See also ch 6 par 5.2.2.2 *infra* with regard to the use of ISO standards.

56 Shaw 51; Steiner 5.

57 *Ibid.*

58 In this regard there is a great difference between the EU and other international institutions, especially in view of the significant influence of the ECJ on the development of the law.

59 Art 4 of the EU Treaty.

60 Jacobs *et al* 3; Steiner 10; Shaw 51; Lasok and Bridge 29 *et seq.*

bring forward proposals for Union legislation which must be approved by the Council and sometimes by Parliament before they can be adopted.[61] The ECJ interprets Union law through cases brought before it by individuals or member states against another state or individual or against the EU.[62] The ECJ has to ensure that the law is observed during the interpretation and application of the Treaties and it is the supreme authority on EU law.[63]

The Council and the Commission are the two most important structures in terms of the Community's decision-making process as they share the legislative powers.[64] The binding measures promulgated by these two bodies can be in the form of regulations, directives and decisions.[65] Recommendations and opinions are non-binding. Regulations are binding and directly applicable in all member states, directives are implemented by the states themselves adopting appropriate measures[66] and decisions are only binding on the relevant member state or individual to whom they are directed.[67]

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61 Jacobs *et al* 3 compares the relationship between the Council and Parliament with that of the two houses of a legislature.

62 Lasok and Bridge 35 summarise the authority of the Court as follows:

> The Court is the custodian of the Treaty, the watchdog of legality within the community and the executor of the supremacy of the community law over the national laws of the member states in case of conflict between the two systems.

63 Art 164 of the EU Treaty.

64 De Vos 1994 *TSAR* 6; Steiner 20. The European Council is the most prominent form of cooperation between governments within the Union; it is also the key forum for major political decisions in the EU: Weatherhill and Beaumont 75.

65 Art 189 of the EU Treaty. *Cf* Steiner 20.

66 See par 8.1 *infra*.

67 *Ibid*.

5. Sources of EU law

The following sources can be distinguished:

(a) The EU Treaty and Protocols as amended by the succeeding treaties.

(b) EU secondary legislation in the form of regulations, directives and decisions.

(c) International agreements entered into by EU institutions on behalf of the Union according to their powers in terms of the EU Treaty.

(d) Judicial legislation of the European courts concerning matters of EU law, including that of the ECJ.

In terms of international law, the law arising from these sources is binding on all member states which are obliged under the EU Treaty to take appropriate measures to ensure application of these rules.[68]

6. Enforcement of EU law

6.1 Nature of EU law

There is no clear indication in the Treaties with regard to the relationship between Union law and national law and what the effect is of EU law within the domestic legal system of the member states. Article 5 of the EU Treaty provides:

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68 Art 5 of the EU Treaty.

> Member States shall take all appropriate measures, whether general or particular, to ensure fulfilment of the obligations arising out of this Treaty or resulting from action taken by the institutions of the Community. They shall facilitate the achievement of the Community's tasks. They shall abstain from any measure which could jeopardize the attainment of the objectives of this Treaty.

Although treaties form part of international law, which is primarily applicable between states and not individuals, the ECJ holds a different view with regard to the EU Treaty. By accession to the Union the member states have created an autonomous legal system in which not only states, but also individuals are the subjects.[69] This view is enunciated in the following principles:

- EU law penetrates into national legal systems and must be applied by national courts subject to the interpretation, effect and validity thereof by the ECJ;
- individuals can rely on rules of EU law in national courts because they give rise to rights which must be protected by the national courts (principle of "direct effect");
- EU law takes precedence over conflicting national law (principle of "supremacy");
- organs and constituent bodies of member states are responsible for reversing the effects of violations of EU law which affect individuals.[70]

The Commission can initiate infringement proceedings against a member state that

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69 See Shaw 14.

70 Shaw 14-15.

fails to fulfil its obligations under EU law.[71]

6.2 Direct applicability of EU law

It is important to know whether given EU legislation is **directly effective** or not, as such law must not only be applied by the domestic courts, but must take precedence over any conflicting provisions of national law.[72] Provisions of international law that are directly applicable can be directly effective if all the necessary and applicable criteria regarding clarity and completeness, and the specific rules and attitudes of the relevant member state, are met.[73] Although the EU Treaty provides only that regulations are "directly applicable", thereby implying that only regulations may have direct effect, the ECJ has extended the principle of direct effect to Treaty articles, directives, decisions, and even to some international agreements entered into by the EU.[74]

A directive is binding in terms of the result to be achieved upon each member state to which it is addressed, but leaves the choice of form and methods to the national authorities.[75] In other words, directives take effect within the national order via

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71 Art 169 of the EU Treaty; Weatherill and Beaumont 56.

72 This is due to the principle of "primacy of EU law": *Internationale Handelsgesellschaft* [1974] 2 CMLR 540; *Re Kloppenberg* [1988] 3 CMLR 1. See Steiner 42 *et seq*; Westerdijk 47 *et seq*.

73 The question of whether a provision is directly effective or not depends on the construction, language, purpose and terms on which the EU Treaty or other provisions have been incorporated into domestic law: Steiner 25 *et seq*.

74 This was done by the ECJ in a series of landmark decisions in terms of the Court's jurisdiction under art 177 to give preliminary rulings on matters of interpretation of EU law on reference from national courts: *NV Algemene Transport- en Expeditie Onderneming Van Gend en Loos v Nederlandse Administratie der Belastingen* [1963] 1 CMLR 105; *Defrenne v SABENA* (no 3) [1978] 3 CMLR 312; *Walrave and Koch v Association Union Cycliste Internationale* [1975] 1 CMLR 320. See Weatherill and Beaumont 293 *et seq*; Westerdijk 57 *et seq*.

75 Art 189 of the EU Treaty.

national implementing orders. A directive usually takes effect upon notification of the addressed member state and specifies a period of time in which it must be implemented into the national law. If a member state fails to implement the directive within the time limit, individuals and legal persons may be able to rely on the provisions of that directive in dealings with that member state. In the case of *Grad v Finanzamt Traunstein*[76] the ECJ held that a directive could be directly effective, especially if it is unconditional and if the time-limit given for implementation has expired. The Court reasoned that if the states were free to ignore their obligations in terms of directives, the useful effect of such obligations would be weakened.[77] Enforcement of EU law will also be less effective if it is left only to the Commission to act in terms of articles 169 and 170 of the EU Treaty against the offending states.[78] A directive cannot be directly effective before the time-limit has expired.[79] Although only regulations have to be published in the *Official Journal* (*OJ*) of the EU, it has happened frequently that directives have also been published in the *OJ*, especially where they applied to all the member states.[80] Directives and decisions shall be made known to those to whom they are addressed and be effective from such notification.[81] Therefore, after notification the EU Directive will have to be applied by the national courts of member states who have not yet adopted it into their national law.

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76 [1971] 2 CMLR 1. See Steiner 29.

77 *Ibid.*

78 In terms of these sections member states can sue one another for breach of obligations in terms of EU law. The Commission as guardian of the Treaties who represents the objective interests of the Union, has the task of suing the state in default: Steiner 31; Lasok and Bridge 372.

79 *Publico Ministero v Ratti* [1980] 1 CMLR 96.

80 Weatherill and Beaumont 116.

81 *Ibid.* In fact, directives as well as many decisions are also published in the *OJ*.

7. Treaty policies

7.1 General

Apart from policies laid down in the Treaty, new policies emerge in consequence of the development of the EU.[82] There are two EU Treaty policies relevant to the topic of ES's: the one pertains to **science and technology**, specifically information technology as it applies to computer law,[83] and the other concerns **consumer protection**, specifically the issue of product liability as well as liability for services rendered. Of these policies, only the one pertaining to product liability as provided for in Directive 85/374 will be discussed as it could have an effect on liability for defective software (including ES's). The Directive is, however, only applicable to "a defect in a product"[84] and therefore it must first be established whether software; and in particular ES's, are products in terms of the provisions of the EU Directive.[85]

As pointed out earlier [86], one of the characteristics of the technological society of the current information age is that consumer products may contain information (in the form of a computer program) as a component part of a product, for example an automated washing machine driven by a computer chip,[87] or products may consist mainly of information, for example physical disks containing an ES which advises the user on how to complete a tax form.[88] The question then arises whether such

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82 See Lasok and Bridge 543-555.

83 Lasok and Bridge 553.

84 Art 1 of EU Directive 85/374.

85 See par 9 and 10 *infra*.

86 Ch 2 par 10.1.2 *supra*.

87 This refers to software with a **material output**, for example the ES Machine: see ch 2 par 10.1.2 *supra*.

88 This refers to software with an **intellectual output**, for example the Intelligent Assistant and the Self-Help System: see ch 2 par 10.1.2 *supra*.

"information products"[89] are "products" in terms of the directive.[90]

7.2 Policy regarding information technology

With regard to the harmonisation of computer law the most important initiatives taken by the EU are the directive on the protection of semiconductor product designs; the directive on the legal protection of computer programs; the directive concerning the protection of individuals in relation to the processing of personal data; and the directive on the legal protection of databases.[91]

7.3 Policy regarding consumer protection

Consumer protection is a policy which the EU hopes to achieve by means of harmonising legislation through a continuing action program which was started in 1975.[92] The first program (1975-1981) acknowledged that consumers ought to be protected against injury or damage to their interests caused by defective products or unsatisfactory services. Purchasers of goods should be protected against the abuse of power by vendors, particularly against the use of one-sided standard contracts and the unfair exclusion of essential rights in contracts. The second program (1981-1985) reiterated the objectives of the first program but emphasised the need for legislation. A new dimension was also added, namely consumer protection in the field of **services**. The third programme (1985-1988) recommended vigorous legislative action and it was during this period that EU Directive 85/374 was issued. Consumer protection is at present continuing with a fourth programme in which the emphasis is on the protection of economic interests and the laying down of EU standards

89 See par 9.1.3 *infra* on the nature and consequences of "information products".

90 See par 9.3 *infra*.

91 See par 3 *supra*.

92 *Cf* Lasok and Bridge 550 *et seq*.

regarding the quality of products.[93]

8. The 1985 EU Directive on liability for defective products[94]

8.1 Background to the EU Directive

Figures indicate that 40-45 million people are injured and between 20 000 and 45 000 people die each year in the EU because of accidents befalling consumers.[95] As the main cause of consumer accidents lies in the distribution of defective products, a serious concern of the common market of the EU has been the nature of the different liability regimes of the member states relating to defective products.[96] Many of the civil codes of the EU countries do not specifically address product liability concerns, leaving injured consumers to rely on the principles of contractual and delictual liability. Apart from the fact that product liability is excluded in many standard consumer contracts,[97] the requirement of privity in contract is not necessarily present in a relationship between the injured consumer or bystander, and the manufacturer.[98] In negligence actions on the other hand, the consumer bears the burden of proof of negligence on the part of the manufacturer.[99] The differing standards between member states regarding the description of a defective product, the extent of liability, responsible parties, and burdens of proof in litigation have caused problems to manufacturers in ascertaining the degree of care required of them and in predicting

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93 *Ibid.*

94 Hereafter the "EU Directive".

95 Triaille 1993 *CLSR* 214.

96 Triaille 1993 *CSLR* 214; Mathewson 1993 *L&PIB* 1285.

97 See ch 3 pars 2.4.1 2.8 *supra.*

98 See ch 3 pars 1.2 2.8 *supra.*

99 See ch 5 part I pars A 2.3 B 2.3 *supra* and part III pars A 2.2.3 B 2.2.2 *infra.*

their exposure to liability when distributing across western Europe.[100] To address this concern, the Commission[101] proposed a harmonisation of member state product liability laws which led to the issuing of the Directive on liability for defective products[102] by the Council[103] in terms of which all member states have to pass legislation whereby a single new products liability regime is established within the EU.

The aim of the EU Directive is to balance the interests of the consumers and the producers (manufacturers) through establishing "liability regardless of fault" in the case of producers of defective products.[104] The liability of the producer is, therefore, not based on negligence and does not depend on the existence of a contract. The rationale behind this measure is that it is regarded as unfair for the victim to be without a legal remedy even in circumstances where the producers cannot be blamed for the damage caused.[105] In practice the consumer does bear the costs of this increased protection as producers insure themselves against the risk and add the cost thereof to the market price of the product. All member states had to introduce the EU Directive into their national legal systems by the end of July 1988. In the United Kingdom, it was done through the CPA,[106] in Germany through the Product Liability Act of 1989 (*Produkthaftungsgesetz: PHG*)[107] and in the

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100 Mathewson 1993 *L&PIB* 1285.

101 See par 4 *supra*.

102 The EU Directive 85/374.

103 See par 4 *supra*.

104 Triaille 1993 *CLSR* 214; Westerdijk 42; Mathewson 1993 *L&PIB* 1287.

105 *Contra*, however, Martinek 1995 *TSAR* 641 who states that the reason for allowing member States the option of retaining the development risk-defence, as is discussed in par 8.3.8 *supra*, is because of the apparent unfairness of holding the producer liable for a risk that could not be foreseen: see part III par A 5.6.7 *infra*. It is my submission they should indeed be held liable for such a risk as it is unfair to burden the victim therewith: see ch 7 *infra*.

106 See ch 5 part I par A 3.2 *supra*.

107 See ch 5 part III par A 5.6.6 *infra*.

Netherlands through the *Wet Produktenaansprakelijkheid* contained in sections 185-193 of the *Nieuwe Burgerlijke Wetboek (NBW)*.[108]

8.2 Objectives of the EU Directive

The preamble to the EU Directive justifies the approximation of the product liability laws of member states because the many legal divergences (i) lead to a distortion of competition; (ii) affect the free movement of goods; and (iii) entail a different degree of protection of the consumer that is not compatible with a common market for all consumers.[109] From these reasons two main objectives are apparent, namely the harmonisation of product liability laws and the protection of consumers against personal and property damage. According to Triaille,[110] it seems that the main objective of the EU Directive is the **protection of consumers** and that **harmonisation** comes second.[111] He contends further that by analysing and establishing the objectives of the EU Directive, one may obtain a good indication of the way in which it should be interpreted to apply to matters like software, which are not explicitly included in the scope of the Directive.[112] He therefore concludes that, because of this overriding objective of consumer protection, the provisions of the EU Directive should be **interpreted widely** to permit applications to products such as

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108 See ch 5 part III par B 3.3 *infra*.

109 Triaille 1993 *CLSR* 215; Westerdijk 42; Mathewson 1993 *L&PIB* 1287.

110 1993 *CLSR* 215. This opinion is based on two reasons: (a) the fact that it is left to the national legislators to implement the directive as they see fit; thereby giving them the scope to vary in their legislation; and (b) the fact that the directive does not replace existing national laws but only gives victims another legal instrument to employ in order to obtain redress.

111 This opinion is confirmed by Mathewson 1993 *L&PIB* 1288.

112 *Ibid*. See also par 9.1 *infra*.

computer programs, as such an interpretation would serve the interests of consumers.[113]

8.3 Principles of the EU Directive

In the following paragraphs, certain selected principles of the EU Directive, which are viewed as the more relevant ones for purposes of this study, are discussed. The full text of the EU Directive is given in appendix VI.

8.3.1 Strict liability

The producer shall be liable for damages caused by a defect in her product even in the absence of any fault or negligence on her behalf or of a breach of contract with the claimant.[114] The victim must prove the damage suffered, a defect in the product and a causal link between them.[115] It is therefore clear that the Directive establishes a system of **strict** liability[116] of the producer in case of a defect in a product. The provisions of the EU Directive only has effect by enactment of implementing legislation by the member states, the Directive's terms are not self-

113 1993 *CLSR* 220. Although Mathewson 1993 *L&PIB* 1291 doubts that "immaterial movable goods such as software" is covered by the EU Directive, he does not discuss and analyse the issue and it is clear that he did not seriously investigate the possibility of software falling within the ambit of the definition of a product in terms of the Directive. However, many commentators including authors of text books, accept that software, on its own or as part of another consumer product, is a **product** for purposes of product liability in terms of the EU Directive: *cf* Tapper 245; Reed 1993 *CL&P* 149; Singleton 1994 *CL&P* 167; Rowland and Rowland 237; Bott *et al* 236; Reed(2) 74; König 71; Junker 210; Heussen(2) 48 2; Jauernig *et al* 1007; Van der Klaauw-Koops 89; Stuurman and Vandenberghe 1669; De Raadt 172; Westerdijk 81.

114 Art 1.

115 Art 4.

116 Liability without fault.

executing.[117]

8.3.2 Type of products

A "product" includes all movables which can be the subject of economic activity except primary agricultural products, game and electricity.[118] The product can be incorporated into or be part of another movable (for example the radio in a car) or immovable (bricks of a house) good; and it does not have to be for sale or transferred to the user; it is sufficient that it is put at the disposal of the public.[119] Immovable goods and services are excluded.[120] It is uncertain whether intangible goods are included.[121] Member states do, however, have a discretion to include primary agricultural products and game within the meaning of "product" in its national legislation.[122]

8.3.3 Liable persons

In terms of article 1 liability is imposed on the producer.[123] A producer is defined as the manufacturer of a finished product, the producer of raw material or the manufacturer of a component part.[124] Producers therefore include all persons

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117 Hoffman and Hill-Arning 3.

118 Art 2. Primary agricultural products refer to products of the soil, stock-farming and fisheries.

119 Triaille 1993 *CLSR* 215; Westerdijk 45; Hoffman and Hill-Arning 4.

120 A directive on liability for defective services has been proposed: Triaille 1991 *CL&P* 217. See par 3 *supra*.

121 See par 9.1.3 *infra*.

122 Art 15.

123 Par 8.3.1 *supra*.

124 Art 3(1).

engaged in the production of finished products, components, raw materials and, since member states may include agricultural products within the scope of these provisions,[125] even producers in the agricultural sector are included. If the producer's identity cannot be established, the importer will be held liable,[126] and if neither of them can be identified, all suppliers will be held liable towards the victim.[127] Therefore, all distributors and retailers of a product, regardless of the country of origin, may be held strictly liable for damage caused by the product. However, each supplier or importer of a product can exclude themselves from the definition of "producer" if they can point to another producer further up in the chain of distribution within a reasonable time.[128] In the case of multiple liable parties, they will be held jointly and severally liable.[129]

8.3.4 Defective product

A product is defective when it does not provide the **safety which a person is entitled to expect**, taking into account the following circumstances:[130]

(a) the presentation of the product;

(b) the use to which it could reasonably be expected the product would be put;

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125 Par 8.3.2 *supra*.

126 Art 3(2) holds liable "any person who imports into the Community a product for sale, hire, leasing or any form of distribution in the course of his business."

127 Art 3(1) also holds any person liable "who, by putting his name, trademark or other distinguishing feature on the product, presents himself as its producer.

128 Art 3(3). *Contra* the position in the USA, where all sellers of a product are jointly and severally liable, including all persons in the chain of distribution: Restatement (Second) of Torts 402A. See also part I par B 3.3 *supra*.

129 Art 5.

130 Art 6(1).

(c) the time when the product was put into circulation.

From the above it is clear that the EU Directive uses an objective approach to evaluate the producer's duty of care towards the user.[131] A product is also not regarded as defective only because a better product was subsequently put into circulation.[132]

8.3.5 Damage

Only damage caused by death, personal injury and damage to private items of property other than the defective product itself are covered by the directive,[133] provided the damage is more than 500 ECU.[134] Thus, application of the EU Directive in case of damage not caused by death or personal injury is limited to property other than the defective product itself, which is intended for private use or which has been privately used by the victim. Damage to commercially-used property therefore does not give rise to liability and the threshold price ensures that minor losses to property are borne by the victims themselves.[135] Member states may impose an upper limit of 70 million ECU on a producer's total liability for damages resulting from death or personal injury caused by identical items with the same effect. Such a ruling can be advantageous to producers and/or their insurers in case of a class action based on damage caused by identical defective products.[136] This provision is optional and member states have a discretion whether to implement it or

131 The "consumer expectation" test: Mathewson 1993 *L&PIB* 1291.

132 Art 6(2).

133 Art 9.

134 ECU refers to European Community (monetary) Units.

135 Triaille 1993 *CLSR* 216; Hoffman and Hill-Arning 4.

136 See ch 4 par 6.4 *supra* with regard to the institution of class actions.

not.[137]

Pure economic loss is not recoverable under the EU Directive but may be claimed in terms of the applicable national law, if the latter permits such a claim. Recovery of non patrimonial damages, for example compensation for pain and suffering, is also not provided for in the EU Directive, but may, like economic loss, be claimed under the traditional product liability rules of the relevant country.[138]

8.3.6 Causality

The plaintiff has to provide evidence of a causal link between the defective product and the damage.[139] The EU Directive does not give any explanation or instruction with regard to causation. The determination of a causal link is left to the different individual theories of causation of member states.[140] Where the damage is caused both by a defect in the product as well as by the act or omission of a third party, the liability of the producer will not be reduced.[141] The producer's liability may be reduced or disallowed where there is contributory negligence by the victim.[142]

8.3.7 Exclusions of liability

The EU Directive prohibits contractual disclaimers and limitations of the liability of "the

137 Art 16.

138 Hoffman and Hill-Arning 9.

139 Art 4.

140 For example, the Netherlands use adequate causation: see part III par B 2.2.4 *infra*; Germany uses adequate causation: see part III par A 2.2.4 *infra*.

141 Art 8(1).

142 Art 8(2): See par 8.3.8 *infra*.

producer arising from this Directive in relation to the injured person".[143] Exemptions from liability arising from other grounds, for example a contract, remain valid. Furthermore, the prohibition of disclaimers are only applicable to the injured person, with the result that exemptions remain in effect between the different links of the production and distribution chain.[144]

8.3.8 Defences

The EU Directive contains several defences which may be advanced by the producer. The producer's liability may be reduced or disallowed if the injury results from both a defect in the product and the fault of the injured person or of any person for whom the injured person is responsible.[145] The liability of the producer will, however, not be reduced if the damage is caused both by a defect in the product and by the act or omission of a third party.[146] A limitation period of three years from the date on which the claimant became aware of the damage, applies[147] and a ten-year period of repose which starts on the date which the producer put the product into circulation, is provided for in the EU Directive.[148]

The EU Directive provides the producer with the following **absolute** defences against

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143 Art 12.

144 See Triaille 1993 *CLSR* 216.

145 Art 8(2). This situation is also referred to as **comparative negligence**, which describes the incidence of taking the defendant's negligence into account when determining liability. See also the situation of contributory negligence of the plaintiff in the national systems investigated: part I pars A 2.4 and B 2.4 *supra*; part III pars A 2.3 and B 2.3 *infra*.

146 Art 8 (1): See par 8.3.6 *supra*.

147 Art 10.

148 Art 11.

claims for damages:[149]

(a) The non-distribution-defence

The producer is not liable if it is proved that someone else put the product into circulation.[150] The distribution of the defective product must be the result of a business decision of the producer; the latter will therefore not be liable in the case of theft of the product.

(b) The later-defect-defence

The producer is not liable if it is proved that, having regard to the circumstances, it is probable that the product was not defective when put into circulation.[151] The defect which caused the damage must have existed at a point in time which falls within the producer's sphere of influence. This defence does not aid the producer if a design defect exists or a failure to instruct is involved because such defects affect the product from the start of production.

(c) The non-commercial-defence

The producer is not liable if the product was not manufactured for sale or any other form of distribution for economic purposes, and was not manufactured or distributed in the course of the producer's business.[152] The first requirement exempts the producer from liability if it was not intended to make a profit from the products. In these cases the defective product is not an object of commercial activity. The

149 Art 7. The titles of the defences are those used by Martinek 1995 *TSAR* 638-642. See also Hoffman and Hill-Arning 7-9.

150 Art 7(a).

151 Art 7(b).

152 Art 7(c).

underlying policy reason for this defence is that it is inappropriate to hold the producer strictly liable in circumstances where the liability risk and cost cannot be passed on to the consumer through the price of the product. However, the second requirement makes the producer liable the moment the product is manufactured in the course of her business, irrespective of whether she intended to make a profit or not.[153]

(d) The legal-compliance-defence

The producer is not liable if the defect is due to compliance of the product with mandatory regulations issued by public authorities.[154] Martinek[155] points out that this provision frees the producer from the dilemma of "either disobedience or liability". However, the defence cannot apply if the relevant regulations only prescribe a minimum standard; it must be mandatory, leaving the producer with no choice.[156]

(e) The state-of-the-art-defence or development-risk-defence

The producer is not liable for defects in a product which, in light of the state of scientific and technical knowledge at the time when the product was put into circulation, was not such that the existence of the defect could be discovered.[157] Member states are allowed a discretion in the implementation of this defence.[158]

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153 *Cf* Martinek 1995 *TSAR* 640.

154 Art 7(d).

155 1995 *TSAR* 640.

156 Technical standards such as the German Industrial Standards (*Deutsche Industrie Normen: DIN*), are not peremptory legal provisions but only voluntary recommendations unless they are referred to in a statute: see part III par A 5.5 *infra*. See also the discussion with regard to ISO 9000 in ch 6 par 5 *infra*.

157 Art 7(e).

158 Art 15(1)(b).

The option to exclude this defence in member state legislation is highly controversial as it is contrary to the EU Directive's allocation of burden of proof: the denial of the defence allows a plaintiff to litigate successfully if she can demonstrate that subsequent developments in scientific knowledge prove that the product had a defect when it was originally placed on the market. Permitting recovery against the producer in these circumstances actually contravenes article 6 of the EU Directive which qualifies the consumer's expectation standard by limiting it to that of product safety at the time the product was marketed.[159] If a member state decides to disallow this defence, the Commission must be so informed in order to convey this information to the other member states.[160] Of all the member states, only Luxembourg has declined to implement this defence.[161]

(f) The sub-supplier's defence

Manufacturers of component parts are not liable if the defect is due to the design of the product into which the component has been fitted, or to the instructions given by the manufacturer of the finished product.[162] The producer of the finished product stays responsible to the consumer for all previous stages of production.[163]

8.4 Summary

The EU Directive constitutes a strict products liability regime throughout the EU. This strict liability regime exists in addition to the other liability regimes already in

159 See par 8.3.4 *supra*. *Cf* Mathewson 1993 *L&PIB* 1293.

160 Art 15(2).

161 Hoffman and Hill-Arning 9.

162 Art 7(f).

163 See Martinek 1995 *TSAR* 641-642.

existence in the national legal systems of the member states.[164] Plaintiffs may therefore recover their losses in terms of different liability regimes.[165] In essence, the EU Directive provides that the producer, which includes any person involved in the chain of supply, even the importer, shall be liable to compensate victims for any personal injury or injury to private property caused wholly or in part by a defect in the product.[166] The plaintiff does not have to prove any negligence on the part of the producer, only that the product was defective, that the damage has occurred and that there is a causal link between the defect and the damage.[167] The damage which may be claimed for is limited to that caused by the death or personal injury of the victim, and to property of a type intended for private use, other than the defective product itself.[168] This liability towards the injured consumer may not be excluded or limited.[169] The Directive essentially protects consumers from harm caused by unsafe products, therefore the loss which is compensated is limited to personal and property injury and excludes any further consequential and economic loss.

Various defences are provided for in the Directive, the development-risk-defence being the most important.[170] The typical case groups of product defects that have crystallised under general product liability principles, are manufacturing defects, design defects and instruction defects (also referred to as "failure to warn"

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164 Mathewson 1993 *L&PIB* 1294.

165 Mathewson 1993 *L&PIB* 1294 notes that this failure of the EU to eliminate other alternatives for consumer relief creates potential unpredictability regarding claims instituted under other regimes of liability, which is an obstacle to harmonization.

166 See pars 8.3.1 8.3.3 8.3.5 *supra*.

167 See par 8.3.6 *supra*.

168 See par 8.3.5 *supra*.

169 See par 8.3.7 *supra*.

170 See par 8.3.8 (e) *supra*.

defects).[171] It must be noted that a manufacturing defect is established by the mere existence of such a defect, in that a product was manufactured which deviated from the specifications set by the producer herself. The latter two defects on the other hand can only be established taking into account the **reasonableness** of the conduct of the manufacturer.[172] Therefore, it has been stated that, in practice, these cases reintroduce **fault-based** elements of negligence into the strict product liability regime of the EU.[173]

Although the primary aim of the Directive is to constitute a uniform product liability regime, member states are allowed a choice in the implementation of three provisions, namely (i) the imposing of liability for primary agricultural products;[174] (ii) disallowing the development-risk-defence;[175] and (iii) imposing the limit of 70 million ECU on damages for personal injury caused by identical items with the same defect.[176] For purposes of software liability only the latter two choices are relevant and will be considered in further discussion. The EU Directive primarily protects the **final consumer**, as can be seen from the prohibition of contractual exemption of the producer's liability in relation to the injured party only.[177]

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171 See par 8.3.8 *supra*.

172 In terms of art 6 of the EU Directive a product is defective when it does not provide the safety which a person is entitled to expect, **taking all the circumstances into account**: see par 8.3.4 *supra*. The existence of a design defect is determined by reference to industry custom, usage, the state-of-the-art, economic factors and consumer expectations. In respect of an instruction fault or a failure to warn, the adequacy of the warning is determined with regard to the producer's knowledge of the danger to the customer: see Hoffman and Hill-Arning 7; Martinek 1995 *TSAR* 641.

173 See Hoffman and Hill-Arning 6-7; Martinek 1995 *TSAR* 643-644; Westerdijk 225.

174 Par 8.3.2 *supra*.

175 Par 8.3.8 *supra*.

176 Par 8.3.5 *supra*.

177 Par 8.3.7 *supra*.

9. The applicability of the EU Directive to software

9.1 Introduction

Because the EU Directive does not refer explicitly to software, its applicability thereto has to be established according to the general ambit of the Directive.[178] First of all it must be determined whether software is a **product** in terms of the EU Directive. Once thát is established, the conditions for the application of the EU Directive as they would pertain to software, are investigated with a view to reach a conclusion in respect of ES liability incurred under the EU Directive's product liability regime.[179] In this regard notice can be taken of the objectives of the EU Directive as they may serve as guidelines for the interpretation of the provisions of the EU Directive.[180] Furthermore, it must be determined whether software is tangible or intangible, and what effect the informational nature of software has on the provisions of the EU Directive. These questions must be determined in the light of the provisions of the EU Directive.[181]

9.1.1 Objectives of the EU Directive

If it is accepted that the primary objective of the Directive is the protection of consumers, it can be argued that the inclusion of software within the meaning of a "product", is justified by the fact that such an interpretation would undeniably serve the interests of consumers.[182]

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178 *Cf* Triaille *CL&P* 1991 218-224 and 1993 *CLSR* 217-220; Davies 1993 *CL&P* 101-102; Whittaker 1989 *LQR* 135-137; Stuurman 129-141; Westerdijk 89.

179 Art 2: see par 8.3.2 *supra*.

180 See par 9.2 *infra*.

181 Triaille 1991 *CL&P* 222; Triaille 1993 *CLSR* 218. *Cf* Westerdijk 90-92.

182 It was already shown that ES software in particular has a great potential for injury to person and property: see par 9.3 *supra*.

9.1.2 Is software a product or a service?

The Directive can only apply to software if software is a product and not a service. Another directive is being drafted to cover liability for defective services.[183] It was seen that the question whether software is a service or a product is solved in Anglo-American law by applying the "essential nature test".[184] According to this test, the essence of the contract is examined to determine whether it constitutes the providing of a service, in which case the software is a service, or the delivering of a product, in which case it is regarded as a product.[185] Triaille argues that the "essence" of the contract is always precisely the tailored software which is delivered.[186] According to him software always remains a product although the "making available" of the software may be in the form of a service.[187] He compares it to the way in which restaurants operate; they clearly provide a service but the food they serve remains a product.[188]

Regarding the argument advanced by some commentators that the distribution of standard software entails delivery of a product but custom software entails the rendering of a service, Triaille argues that in both instances the software at the end of the process consists of the same material qualities (the disks or a CD Rom) and points out that what is today custom - fitted can tomorrow become standardised and sold as package software on the mass-market.[189] He concludes by stating that,

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183 See par 3 *supra*.

184 Ch 3 par 2.6.1.1 and ch 5 part I B 1.2 *supra*.

185 *Ibid.* However, policy considerations also play a role: see ch 3 par 2.6.1.1 and part I B 1.2 *supra*.

186 Reed(2) 74-75 and König 104 are of the same opinion.

187 1993 *CLSR* 217; Westerdijk 92.

188 *Ibid.*

189 1993 *CLSR* 217.

although software may be the object of a service, it is not a service as such which can **therefore** be excluded from the scope of the EU Directive, in other words, the fact that software is sometimes provided in the context of a service situation, does not automatically exclude software from the scope of the EU Directive.[190] Triaille's view is in my opinion the correct one, software is a product whether it forms part of a service or not.[191]

9.1.3 Is software tangible?

Although there is no reference to tangibility in the EU Directive, Triaille[192] concludes that the EU Directive is not applicable to intangible products. Therefore, if software is intangible the provisions of the EU Directive is not applicable thereto. Electricity is explicitly stated to be a product in the EU Directive,[193] which may lead to the interpretation that all other intangible things are excluded.[194] This interpretation is arrived at by arguing that if an express provision is necessary for a borderline case such as "electricity", it means that all other intangible products are excluded. Triaille[195] points out that the reason for the express provision is that electricity is considered as energy and not as a good or a product in some countries, and therefore no other meaning should be attached to it. He is of the opinion though, that the Directive is not applicable to intangible goods, because of the many other provisions that would be difficult to understand in the context of intangible products. For example, what would the meaning of raw materials used in the production

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190 Triaille 1993 *CLSR* 218.

191 In terms of the EU Directive it is immaterial **how** the product is put at the disposal of the public: see par 8.3.2 *supra*.

192 *Ibid*.

193 Art 2.

194 The *unius inclusio est alterius exclusio* - rule: see Steyn 50 *et seq*.

195 1993 *CLSR* 218.

process referred to in article 3(1) be?; who would the producer or importer of immaterial goods be?; how would a trademark be affixed on it and what would constitute a component part?[196] It therefore seems as if the Directive is only applicable to tangible goods because of the provisions mentioned in the previous paragraph and also because of the main objective of the EU Directive, which is to protect consumers from damage suffered from defective products. [197]

The tangibility of software is sometimes inferred from the distinction between the software's material support (the program disks or the CD Rom) and the content (the information contained in the software itself). It is then contended that the former is material and thus a product but the latter is immaterial and not a product.[198] Consequently, the EU Directive would apply in cases where damage is caused by a defect in the support material but not by a defect in the information contained in the software. In situations where software is transferred independently of material support by means of cable, radio, etcetera, the EU Directive will then not be applicable, but if the software is incorporated into a material support, the EU Directive will apply.[199] Such a distinction may lead to very unfair results for the victim to whom it really makes no difference in what form the software is acquired. This argument loses sight of the fact that a computer program at its origin, is always integrated on a material support, whether it is part of the hardware or on disk, etcetera.

Of greater importance is the distinction between the medium and the information contained in the medium, and the damage that may be caused by a defect in the medium and the information respectively.[200] Although the physical medium of

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196 *Ibid.*

197 See par 9.1.1 *supra*.

198 Triaille 1993 *CLSR* 219. See also ch 3 par 2.6.1.1 *supra*.

199 See Triaille 1993 *CLSR* 219.

200 Triaille 1991 *CLSR* 219.

software such as a disk, is easily covered by the definition of a tangible product, it is difficult to imagine damages caused exclusively by the medium. As the medium does not ordinarily possess any dangerous parts such as sharp edges, etcetera which can injure a person, damage to a person or property cannot easily be imagined. However, such a medium will be defective if it does not provide the safety which a person is entitled to expect and a person who consequently suffers damage of a type covered by the EU Directive will obtain compensation after establishing a causal link between such a defect and the damage.[201] What is much more likely to envisage, is damage caused by the application of the contents of the medium, namely the information contained in the software, for example personal injury caused by taking the wrong medicine prescribed by a defective ES. The question then arises whether it can be said that the information is a product which causes damage when defective, or whether damage is only caused through the intervention of a human, raising the issue of causality.[202]

The argument is also advanced that because the main importance of software lies in the intangible contents of the medium consisting of "information", the medium such as the disks, etcetera through which the information is transferred, is not indicative of the true nature of software, therefore software as a whole is intangible and cannot be regarded as a product.[203] Apart from the fact that this argument is difficult to reconcile with the situation of books and audio cassettes, which are clearly products, it loses sight of the way in which information manifests itself.[204] To argue that software is intangible because it consists of intangible information, loses sight of the fact that although the information is beyond the perception of human beings, it does

201 See par 8.3.5 *supra*.

202 See par 9.2.3 *infra*.

203 See ch 3 par 2.6.1.1 *supra*.

204 Triaille 1993 *CLSR* 217.

not mean that there is no material substance.[205] Rights, for example intellectual property rights and ownership rights, do not have material substance and cannot have an impact in the material world except through human intervention. Such rights are immaterial and intangible by nature.[206] However, the same is not true in the case of software; once it is introduced to a computer, changes that are "material" and "tangible" are definitely brought about: in a personal computer words will appear on the screen and may be printed on paper;[207] and in the case of a robot, the software will effect functioning and movement.[208] In this regard the **functional distinction** in software is important: software with a material output[209] may directly cause damage whereas software with an intellectual output[210] can only cause damage through the actions of a human user.[211] According to Triaille,[212] software with a material output amounts to a product but software with an intellectual output is not a product.

Geldenhuys'[213] theory with regard to information concurs with the above outline: Information originates firstly in a person's cognitive thought, thereafter it is presented in some or other form depending on the kind of information. Information that is manifested in an "information carrier" that has a material substance is a product,

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205 *Ibid.*

206 Triaille 1993 *CLSR* 218.

207 Thus this would create a so called "hard copy".

208 This dual character of software, in that it is at the same time a list of instructions as well as a device which will effect the working of a machine (like a mechanical device) is unique and in a sense, responsible for all the discussion on the means for legal protection: Triaille 1993 *CLSR* 218 *et seq.*

209 Eg the ES Machine: see ch 2 par 10.1.2 *supra.*

210 Eg the Intelligent Assistant: see ch 2 par 10.1.2 *supra.*

211 See ch 2 par 10.1.2 *supra* and par 9.2.3 *infra.*

212 1993 *CLSR* 220.

213 Geldenhuys 531; see also ch 2 par 9.1 *supra.*

unlike information manifested in an information carrier that does not have a material substance, for example an immaterial property right.[214] By definition, software must then **always** be tangible as the instructions it consists of are necessarily materialised in some or other form, otherwise it would not be software but still only information residing in the brain.[215]

Westerdijk[216] distinguishes software, which he defines as instructions to a computer, from "instructive information", which he defines as instructions to a human,[217] and is of the opinion that whereas the former may be a product for purposes of strict liability in terms of the EU Directive, the latter (which he calls an "information product")[218] is not:

> De nadruk dient hierbij echter sterk te liggen op de directheid van de sturende kracht en de daardoor veroorzaakte schade. Software kan zonder menslijke tussenkomst schade veroorzaken; bij instructies gericht tot de mens is dit echter nimmer het geval. Informatie in het algemeen, of instructies in het bijzonder sturen en beïnvloeden slechts de wilsvorming. In het laatste geval doet zich pas schade voor indien een mens op basis van die instructies tot handelen overgaat. De schade word derhalve op indirecte wijze veroorzaakt door de instructies. In dat geval kan mijn inziens niet worden geconcludeerd dat de instructies de hoedanigheid van een produkt aannemen.

However, the situation becomes more complicated in cases where the instructive

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214 *Ibid.*

215 *Cf* Van der Merwe ix who points out the remarkable distortive effect that the misconception of the true nature of information in relation to things (or objects) has had not only in our in law, but in other legal systems as well. According to Van der Merwe 1985 *SACC* 132 the inability of the SA common law rules of theft to deal with incorporeal things originate from the rigid classification of subjective rights adopted from the German Pandectists. The solution offered by Van der Merwe is to include incorporeal things within the category of things that may be stolen.

216 At 4.

217 *Ibid.*

218 Westerdijk 206.

information is derived from the use of software, in other words where the software consists of instructive information.[219] According to Westerdijk,[220] such software does not automatically qualify as a product to which the strict product liability provisions of the EU Directive applies, it may constitute an information product to which the EU Directive is not applicable. In such cases it must be established whether the information was generated by the software itself (*door software gegenereerde informatie*), as in the case **of artificially intelligent** programs such as ES's,[221] or whether the information was generated by the individual and only made accessible through software, as in the case of, for example, a database program (*door software toegankelijk gemaakte software*). Westerdijk[222] is of the opinion that software in the first-mentioned instances constitutes a product to which product liability applies but software referred to in the second type of cases amounts to information products to which product liability does not apply.[223] Although Triaille is also of the opinion that the EU Directive is not meant to apply to information, he does concede that there are different categories of information which makes it impossible to apply a single rule of liability.[224] "Information" must therefore be clearly distinguished from "software".

In conclusion it seems that most commentators are in agreement that the software and its medium constitute a tangible product to which the EU Directive applies, but that the information contained within the software-medium is intangible and cannot

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219 Westerdijk 208.

220 *Ibid.*

221 Westerdijk 210.

222 At 210 242.

223 This conclusion is also closely related to the issue of causality which is discussed later: see par 9.2.3 *infra*.

224 1991 *CL&P* 222 223.

always be regarded as a product.[225] In cases where the information in the software effects a material output it should be regarded as a product. In cases where the information in the software leads to an intellectual output it must be ascertained whether the software itself generated the information, in which case it is a product to which product liability principles applies in case of damage, or whether the information was generated by the human user with the help of the software, in which case it is not a product but intangible information to which product liability principles do not apply.[226] In my view all software is tangible and should be regarded as products as I believe that the information contained in software is always manifested in some or other material form.[227]

9.2 Conditions for the application of the Directive to software

In the previous paragraph it was established that software is a product within the ambit of the EU Directive.[228] In order to claim compensation in terms of this Directive, the injured party has to prove that the software is defective, that the type of damage suffered is covered by the EU Directive, and that a causal link exists between the defect in the software and the damage suffered.[229]

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225 There is some authority for the opinion that the Commission itself confirmed this view in an answer to a Member's question on this issue in Parliament, to which the Commission stated that the directive does apply to software: Triaille 1993 *CLSR* 220; Westerdijk 78-80. However, a binding interpretation for a directive can only be given by the ECJ: see par 6 *supra*.

226 According to Westerdijk 210 these types of software consist of instructive information generated by a human and only made more accessible through the use of the software.

227 See also Geldenhuys' theory regarding "information carriers" discussed above.

228 Par 9.1 *supra*.

229 See par 8 *supra*.

9.2.1 Defective software

In terms of the EU Directive,[230] software is defective when it does not provide the safety which a person is entitled to expect when taking into account:

- the **presentation** of software, which may refer to the users's manual as well as the screen display;
- the **use** to which the software could reasonably be expected to be put, which in the case of safety-related software may require stricter criteria, especially in applications where human lives may be endangered, for example in aircraft piloting systems or in medical apparatus;[231] and
- the **time** when the software was put into circulation.

With regard to the time factor, it must be noted that the safety to be expected from software may evolve as rapidly as does the development of software.[232] However, there may also be an arrangement whereby regularly updated programs are delivered (maintenance agreement),[233] in which case the time factor will not diminish the producer's liability in the course of time. However, a software program may not be regarded as defective just because a newer version is more effective, something which happens often in the case of software.[234] The problem with the notion of defective software is the fact that it is universally accepted that software is never

230 Art 6: see par 8.3.4 *supra*.

231 See ch 2 par 4 *supra*.

232 Triaille 1993 *CSLR* 20.

233 See ch 3 par 2.6.2.2 *supra*.

234 Art 6(2): see par 8.3.4 *supra*.

100% bug-free.[235] The degree of safety which one can expect is, therefore, a policy issue.

A software producer may advance the "state-of-the-art-" or the "development-risk-defence"[236] against a claim based on defective software if such defence is maintained in the relevant national legislation.[237] In terms of the development-risk-defence, a software producer will not be liable if it is proved that the state of scientific and technical knowledge at the time when the software was put into circulation, was not such as to enable the existence of the defect to be discovered.[238] There must be no possibility at all that the defect could have been discovered.[239] If it is accepted that there is no software which is 100% bug-free, it follows that it is impossible to guarantee beforehand that a program does not contain any defect.[240] Consequently, producers of software may almost always have the development-risk-defence available for damage caused by bugs in their software as the state-of-the-art in software technology is such that a defect cannot easily be prevented. The availability of this defence contradicts the strict liability nature of the EU Directive regime.[241]

Standardisation and certification of software has the following impact on the liability

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235 Computer scientists agree that it is absolutely impossible to guarantee in advance that a program will not contain any defect: Triaille 1993 *CLSR* 221; Stuurman 141; Tapper 257; Reed(2) 68.

236 See par 8.3.8 *supra*.

237 In terms of art 15(1)(b) of the EU Directive, member states have a discretion whether to retain the development-risk-defence in their national law or not: see par 8.3.8 *supra*.

238 Art 7(e).

239 Triaille 1993 *CSLR* 221; Westerdijk 278.

240 Triaille 1993 *CLSR* 221; Stuurman 141; Tapper 257; Reed(2) 68.

241 See par 8.3.8 (e) *supra*.

of software producers in terms of the EU Directive:

If the defect in the software is due to a **mandatory** standard issued by public authorities, the software producer cannot be held liable due to the availability of the legal-compliance-defence,[242] but a claim may be instituted against the standardisation body.[243] If a producer has **voluntarily** followed existing standards such as *DIN*[244] or ISO 9000,[245] and a defect which causes damage nevertheless occurs, it can be argued that the software would probably not be considered defective in terms of the provisions of the EU Directive,[246] as it may be expected that such existing standards represent the current prevailing state of technical art as well as the level of safety which the user is entitled to expect in terms of the consumer expectation test.[247] However, compliance with voluntary standards does not *ipso facto* exclude liability or constitute a development-risk-defence if it can be shown that the producer should have taken more precautions.[248]

Certified software which does not comply with the requirements of the certificate will be considered defective as the certificate forms part of the "presentation of the product",[249] and people are entitled to rely on such a certificate.[250] Defective software that causes damage even though it does comply with the certification

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242 Art 7(d): see par 8.3.8 *supra*.

243 *Cf* Triaille 1993 *CSLR* 221; Martinek 1995 *TSAR* 640-641.

244 *Deutche Industrie Normen* (German technical standards): see part III par A 5.5 *infra*.

245 International Standards Organisation 9000: see ch 6 par 5 *infra*.

246 Art 6.1.

247 See par 8.3.4 *supra*.

248 Triaille 1993 *CSLR* 221; Martinek 1995 *TSAR* 640.

249 In terms of art 6.1(a) of the EU Directive: see par 8.3.4 *supra*.

250 Triaille 1993 *CSLR* 221.

requirements, would entitle the producer to rely on the development-risk-defence as it can be said that "everything has been done but nothing could be detected".[251]

9.2.2 Damage caused by software

The application of the EU Directive to software is limited by its definition of damage, namely only damage caused by death, personal injury and damage to private property.[252] Software programs which cause financial loss only (pure economic loss) are not covered by the EU Directive.[253] The type of damage covered by the EU Directive is frequently caused in a direct way by software with a material output such as is found in a software-driven robot or machine,[254] whereas software with an intellectual output which serves as a source of information, rarely causes direct damage to health or property.[255] However, in the latter case damage may be caused indirectly through the actions of the user following a decision based on the information received from the software. An example is the patient who suffers bodily injury as a result of taking incorrect medicine prescribed by a doctor using a defective drug-dispensing ES as an aid. In these cases the question arises whether a sufficient causal link exists between the defect in the software and the damage caused.[256]

9.2.3 Causality in cases of defective software

In the case of software effecting a material output, physical damage can be caused

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251 Triaille 1993 *CLSR* 222.

252 Art 9.

253 Art 9: see par 8.3.5 *supra*.

254 Eg the ES Machine: see ch 2 par 11 *supra*.

255 ES software such as the type embodied in the Intelligent Assistant, may indirectly cause personal injury in the case of a MES, for example: see ch 2 par 4.2 *supra*.

256 See par 9.2.3 *infra*.

directly by defective software.[257] As explained earlier,[258] such software is usually incorporated in a machine, and the activation of the software sets the machine in motion or to work.[259] The software has the same function as a mechanical device, therefore a direct causal link can be established between the defective software and damage incurred because of it. In the case of software with an intellectual output,[260] Triaille[261] states that physical damage can only result from a decision based on the information given to the user of the program, therefore it cannot be said that the software caused the damage, as the intervening user always effects a break in the causal chain.[262] According to Triaille,[263] product liability is only meant to apply to software with material outputs and not to software with intellectual outputs. To hold otherwise would mean that product liability should be applied to **all instances** where information is given to a user, whether in the form of a book or even through the services of an information provider such as a doctor or lawyer.[264] In other words, what Triaille actually means is that software with an intellectual output amounts to "information" which cannot be regarded as a product.[265] This view of

257 See ch 2 par 10.1.2 *supra*.

258 *Ibid.*

259 Eg the ES Machine: see ch 1 par 1.1 *supra*.

260 An output consisting of information that does not bring about a direct material output: see ch 2 par 10.1.2 *supra*.

261 1993 *CLSR* 223.

262 Triaille 1991 *CL&P* 220; 1993 *CSLR* 221. In other words, the intervening user constitutes a *novus actus* which breaks the chain of causation: see ch 6 par 5.3 *infra*.

263 1993 *CLSR* 223.

264 Triaille 1991 *CL&P* 223.

265 See also the opinion of Westerdijk 9 who regards some software with an intellectual output as an information product (*instructieve informatie*) which cannot be regarded as a product for the purposes of product liability, and some software as a product to which the principles of product liability apply: see par 1.3 *supra*.

software with an intellectual output lies at the heart of all contention with regard to software as a product.[266] As stated earlier, the classification of software such as an ES of the type embodied in the Intelligent Assistant which essentially provides a service, as a product, confuses the the traditional policy issues that exist with regard to a product and a service.[267] In my view this distinction between the different types of output in software is just as irrelevant as the distinction between the tangibility and intangibility of software in the determination of a product for the purposes of product liability. A product should be defined as any object or *res* which complies with the objectives of the policy reasons behind the applicability of a special regime for product liability principles, namely that of a commodity available to the public on the commercial market which should be safe to use and for which the producer or manufacturer is in the best position to detect and prevent defects causing damage and to absorb and spread the risk of such damage.[268]

Triaille also fails to distinguish between the two different types of intellectual output as pointed out by Westerdijk,[269] namely an intellectual output generated by the software itself which brings about a direct effect without assistance by a human user, and an intellectual output which is actually generated by the human user with the assistance of the software and treats all software with an intellectual output in the same manner. An example of the first type of intellectual output is found in ES's and other AI programs **which give the solution to the user** (in other words the information is generated by the software itself - *beslissingssturend* software),[270] whereas examples of the second type are found in more conventional software applications such as a database or an informational retrieval system, etcetera which

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266 See ch 2 par 10.1.2 *supra*, ch 3 par 2.6.1.1 *supra*, ch 5 part I pars A 1.2 and B 1.2 *supra*, part III pars A 1.2 and B 1.2 *infra*.

267 See ch 3 par 2.6.1.1 *supra*.

268 See Stuurman 131.

269 At 206 242: see par 9.1.3 *supra*.

270 Westerdijk 242; see also par 9.1.3 *supra*.

enables **the user to work out the solution** (in other words the information is generated by the human user - *beslissingsondersteunend* software).[271] Triaille[272] is of the opinion that in **all** cases of software with an intellectual output, the causal chain between the software's output and the damage is broken to such an extent that it is rather the personal or professional liability of the user than the product liability of the producer, that is at stake. Triaille[273] admits though, that the fact that the EU Directive specifically provides for the situation where damage is caused both by a defect in the product as well as by the act or omission of a third party and precludes a reduction of the producer's liability in such a case,[274] could be interpreted as an objection to his opinion.[275] This provision could mean that the producer of a book or a computer program would still be strictly liable for the damage caused to the client-consumer in the event that a third party such as a doctor causes damage to the client-consumer by using erroneous information contained in the book or in the computer program.[276] However, he negates this possibility because of two reasons, the first being the fact that, in his opinion, the EU Directive is only applicable to damage caused by physical objects and not to damage caused by intangible information, and secondly, because the provision could merely be dealing with a case of double causality.[277] If information was included in the scope of the EU Directive, the notion of causality would have to be understood in a broad sense which could lead to far reaching consequences: would the legal advice of a lawyer amount to a product if the information is printed on paper? What about the plans and design of an

271 *Ibid.*

272 1993 *CLSR* 223.

273 1993 *CLSR* 221.

274 Art 8(1): see par 8.3.6 *supra.*

275 Triaille 1993 *CLSR* 221.

276 Triaille 1991 *CL&P* 221. The objective of this provision is clearly to protect the end-consumer of the product and to ensure an action against the producer of the defective product.

277 *Ibid.*

architect? The system would then be applicable to many traditional services, which is surely not the intention of the EU legislator.[278] Triaille[279] concludes by stating that information is not a single category to which the same system of liability can be applied, the whole context in which the information is provided must be considered in order to decide which system of liability should be applied.[280] According to him an ES amounts to information to which the EU Directive does not apply, because to hold otherwise would mean that the author (the producer) of for example, a MES would be held **strictly** liable in situations where a doctor, rendering the same advice as that generated by the MES, would only be held liable on the grounds of **negligence**.[281] The application of a strict liability regime to such new products as ES's could also hinder new technological development.[282] In my view, Triaille correctly states that information cannot be classified in a single category but it is my contention that software, including ES's of the type embodied in the Intelligent Assistant, is not information and constitutes a product. Whether the software as a product has caused the damage in a given situation depends on the circumstances and is a question of **causation** which is to be determined in terms of the national legal system's theory of causation.

Westerdijk[283] convincingly argues that the question of causality in these cases depends firstly, as already shown, on the type of intellectual output effected, and secondly, in the case of software akin to a product, on the **foreseeable use** of that

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278 The EU is considering a Directive specifically for services: see par 3 *supra*.

279 1991 *CL&P* 222.

280 The USA treatment of software liability also illustrates that there cannot be a uniform theory of product liability - the discussion involving software products take into account the way in which the software was developed, the form in which it is distributed, the parties involved in the production, and the type of application: see part I par B 1.2 *supra*. See also Stuurman 131 *et seq*.

281 Triaille 1991 *CL&P* 223.

282 *Ibid*.

283 At 243.

software. The foreseeable use to which such software can be put may lie in supporting decision making (*beslissingsondersteunend*) or directing decision making (*beslissingssturend*).[284] An example of software that is *beslissingsondersteunend* would be an MES which is used by a doctor in determining the appropriate treatment for a patient.[285] In such cases the doctor would use the MES as a tool or an aid which, together with other aids and the doctor's inherent expert knowledge, would enable her to come to a professional decision during the rendering of professional services. When damage occurs because of wrong advice given by a doctor relying on a defective ES, it cannot be said that the defective software **directly** caused the damage, the doctor's professional intervention breaks the chain of causation in these circumstances.[286] Consequently, there is no causality between the damage and the defective ES and therefore, according to Westerdijk,[287] such an ES cannot be regarded as a product for purposes of product liability. An example of *beslissingssturend* software would be an MES produced and distributed for use by lay-persons to furnish them with a diagnosis without having to go to the doctor, the so-called "doc-in-a-box" kind of system.[288] In these cases there are no intervening doctors rendering a professional opinion, the ES itself comes to a decision upon which the user acts. When such a user consequently suffers harm because of wrong advice given by the defective ES, damage was caused directly by the ES, leaving the causal chain intact. Such software can therefore be regarded as products to which product liability applies.[289]

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284 Westerdijk 243.

285 Eg an ES of the "Intelligent Assistant" type: see ch 1 par 1.1 *supra*.

286 The doctor may have acted negligently in relying on the defective ES which could lead to a malpractice claim against her: see ch 6 par 6 *infra*.

287 *Ibid*.

288 Eg an ES of the type illustrated by the "Self-Help System": see ch 1 par 1.1 *supra*.

289 Westerdijk 243.

For Westerdijk,[290] the difference between the two types of software with intellectual outputs lies in the direct effect or not of the output on the damage. In the first example of *beslissingsondersteunend* software a direct effect does not exist between the software and the damage, but in the second example of *beslissingssturend* software, a direct effect does exist with no break in the chain of causation between the defect and the damage. Westerdijk's argument that product liability provisions should not be applicable to software supporting decision-making, but only to software directing decision-making, is really based on the break in the causal chain between the defect and the damage, and not because the supporting decision making software cannot be regarded as a product.

In my opinion the different intellectual outputs of the two types of software do not have anything to do with their nature. Both are products, marketed and distributed as such, the only difference between them lies in the way they are used. In the case of software that supports decision making, the final decision upon which the conduct is based is made by the human user and not by the software system, therefore it cannot be said that only the defect in the product **caused** the damage. It also seems as if the EU Directive specifically provides for this type of situation by not allowing the liability of the producer to be reduced when damage is caused both by a defect in the product and the conduct of a third party.[291] This means that in the case of harm caused through the use of a defective ES the liability of the producer of the defective software will not be reduced because of the user's negligence in relying on the software. In other words, the producer still incurs product liability towards the injured party, irrespective of the conduct of an intervening user. As against the injured party, the producer's liability may be reduced or even totally disallowed where there is contributory negligence on the part of the injured person.[292]

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290 *Ibid.*

291 Art 8(1) EU Directive 85/374.

292 Art 8(2) EU Directive 85/374.

9.3 Conclusion

In conclusion it seems that software which does not amount to pure information and does not constitute the rendering of a service can be regarded as a product in terms of the EU Directive. If all the requirements for liability in terms of the EU Directive are met, the producers of such defective software will be liable for certain damage incurred by such defects.[293] In the many cases of defective software leading to pure economic loss only, the strict liability principles of the EU Directive will not be applicable as a result of the limitation of the regime to damage consisting of personal injury and injury to private property.[294] In cases where the latter types of damage are incurred, the product liability regime instituted by the EU Directive puts the injured user in the favourable position of not having to prove the producer's fault with regard to the defective software,[295] and of being able to institute a claim for damages against a much wider circle of liable persons, irrespective of any exemption clauses contained in standard form contracts.[296] Because of the ability in terms of the EU Directive to hold the producer of a defective component part of a product liable for damage caused by the use of such a product in its entirety,[297] it is possible to hold the author of the defective part of the software liable for the damage caused.[298] If the supplier of software is unable to identify the author responsible, the supplier will be liable for the damage caused, and so too will the importer of the product into the EU.[299]

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293 See par 9.2.1 *supra*.

294 See par 9.2.2 *supra*.

295 See par 9.2.1 *supra*.

296 See pars 8.3.1 and 8.3.3 *supra*.

297 See par 8.3.3 *supra*.

298 Eg the DA in case of a defect in the knowledge base of the ES.

299 *Ibid*.

It is submitted that the application of the EU Directive to software should not be determined by the technical and commercial peculiarities of software, as technology changes too fast to make it practical to have legal liability depend on such technicalities. Furthermore, it makes no difference to the victims whether software was acquired in the form of a standard package or custom made software, or whether it is tangible or not, they are only aware of the damage it caused.

10. Application to expert systems

In the case of harm suffered because of a defective ES, the victim may institute a claim for damages in terms of the product liability principles adopted by the relevant member state in pursuance of the EU Directive, if all the necessary requirements have been met.[300] This means, in the first instance, that the ES must be a product.[301] According to the principles set out above,[302] the types of ES's identified in this study[303] will qualify as products for purposes of product liability in terms of the EU Directive whenever the software does not constitute the providing of a service and a material output is effected.[304] In the case of ES's effecting an intellectual output, commentators are of the opinion that the EU Directive will not be applicable. One commentator requires a further distinction to be made in software with an intellectual output, namely between a software system that generates a decision by itself (decision directing software) which is a product, and a software system that facilitates a decision by the user (decision supporting software) which is not a product.[305] As the ECJ has not decided any cases on this issue yet, the final

300 See par 8.3 *supra*.

301 See par 9.1.2 *supra*.

302 See par 9.1.3 *supra*.

303 See ch 1 par 1.1 *supra*.

304 Eg the ES Machine: see ch 2 par 11 *supra*.

305 See pars 9.1.3 9.2.3 *supra*.

position remains uncertain. By definition, the Self-Help System belongs to the first group[306] and is therefore a product to which the provisions of the EU Directive are applicable, and the Intelligent Assistant belongs to the second group,[307] which means that such ES's cannot be regarded as products and therefore the EU Directive principles cannot be applied to claims arising from them.[308] Even if ES's of the type embodied in the Intelligent Assistant are regarded as products, as is my submission,[309] product liability would not follow automatically in the case of damage caused by such a system, as the existence of a causal link will have to be established first.[310] If such ES's are products to which the EU Directive product liability principles apply, the producer will be liable for the victim's personal and private property damage sustained irrespective of the negligent conduct of an intervening user.[311] Liability of the producer towards the intervening professional user will seldom arise as the type of damage ordinarily sustained by the latter falls outside the ambit of the EU Directive.[312] Because it is accepted that software cannot be completely error-free, the determination of defective software is a policy decision in which the adherence to current software standards and the adoption of a certified quality assurance system during the production of software indicates that the software complies with the consumer expectation test.[313] In such cases the

306 The Self-Help System is an interactive ES produced for in-home use by lay-persons to advise them on professional and other matters: see ch 2 par 11 *supra*.

307 The Intelligent Assistant is an interactive ES produced for use by a professional person as a tool or decision-aid in the practising of her profession: see ch 2 par 11 *supra*.

308 According to Triaille and Westerdijk: see par 9.2.3 *supra*.

309 See par 9.2.3 *supra*.

310 *Ibid*.

311 Due to the provisions of Art 8(1) of the EU Directive: see par 9.2.3 *supra*.

312 The professional person will more likely sustain economic injury as a result of the defective software, and commercially-used property is excluded from the ambit of the Directive: see par 8.3.5 *supra*.

313 See par 9.2.1 *supra*.

producer will in all probability succeed with the development-risk-defence in that the state of scientific development is such that, notwithstanding appropriate standards and assurance systems having been followed, the defect could not have been detected.

CHAPTER 5

PART III: CONTINENTAL LEGAL SYSTEMS

A. Germany

1. Introduction

1.1 Tortious liability

1.1.1 General

The German legal system is dominated by legislation in the form of codes which must be applied in the light of the Basic law of the German constitution (*Grundgesetz*).[1] The German civil code[2] unified and codified all German civil law and is still applicable after the unification of East Germany with the German Democratic Republic. The law of the Federal Republic was almost completely adopted in the new *Länder* (states of Germany) and the *BGB* applies to all transactions concluded after 3 October 1990 in all parts of Germany. Transactions concluded before this date remain subject to the East German civil code.[3] The codified system has been criticized because the provisions do not reflect the social and economic concerns of modern times and there is no opportunity for flexible interpretation as the courts are only expected to apply the law and not to interpret it.[4]

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1 For a general overview of German legal history and legal development, see Foster 1-29; Zweigert and Kötz 138-162; Markesinis 1-8.

2 *Bürgerliches Gesetzbuch: BGB.*

3 *Zivilgesetzbuch: ZGB.*

4 Foster 54.

Germany's membership of the EU[5] leading to the reception of EU law in Germany, has had a prominent influence on the German legal system.[6] The influence of EU law is of particular importance in determining ES liability in the light of the EU Directive on Product Liability[7] which effected a new products liability regime in German tort law.[8]

German tort law is based on a system of compensation and the Code provides for claims for damages for personal injury[9] as well as property damage.[10] Claims may be instituted for pecuniary loss, including loss of earnings, as well as for non-pecuniary loss which includes pain and suffering.[11] However, social security and private insurance is effecting a change in the primary aim of tort law, which is to compensate the victim, as most of the personal injury litigation is undertaken not by the latter, but by *die Kasse* or *die Geséllschaft* as subrogees.[12]

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5 European Union: see ch 5 part II *supra*.

6 An example is EU Directive 85/374 which was implemented via the *Produkthaftungsgesetz: PHG* of 1989: see par 5.6 *infra*. EU law has supremacy over all inconsistent national law: *Internationale Handelsgesellschaft* [1974] 2 CMLR 540; *Re Kloppenberg* [1988] 3 CMLR 1. See also part II par 6.2 *supra;* Foster 59-63; Steiner 42-53.

7 85/374.

8 See par 5.6 *infra*.

9 Par 842-7 *BGB*.

10 Par 848-51 *BGB*.

11 Markesinis 913 *et seq*.

12 In such circumstances, compensation rules are replaced by rules allocating risks and costs: Markesinis 908; Zekoll 1989 *AJCL* 817.

1.1.2. Forms of liability

Based upon the *Gemeines Recht*, German tort law also[13] has its roots in Roman law where the most important forms of delictual liability arose from *iniuria*, *furtum* and the *lex Aquilia*.[14] Delictual liability is regulated in the delict provisions of the *BGB* in paragraphs 823-852 under the title of *Unerlaubte Handlungen* in the book on *Schuldverhältnisse*.[15] German law does not have only a general delictual ground of liability on which a claim for damages can be based, nor is it made up of various types of torts casuistically developed as in Anglo-American tort law.[16] Instead, the *BGB* compromises by providing for three basic types of tortious liability in paragraphs 823 I, 823 II and 826 *BGB* (*Unerlaubte Handlung im eng Sinne*) as well as containing provisions for some specifically defined tortious situations.[17] Instances of strict liability are regulated in specific statutes not incorporated in the *BGB*.[18] In order to identify all the relevant causes of action that may arise from damage caused by the use of ES's,[19] the liability for unlawful actions of other persons (vicarious liability),

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13 Similar to the South African law of delict: Neethling *et al* 8.

14 Zweigert and Kötz 291.

15 Jauernig *et al* 973-1058; Medicus 330-405; Markesinis 12-17; Zweigert and Kötz 292-296.

16 For the history of German tort law in general, see Zweigert and Kötz 291-299; Markesinis 21-27.

17 For example the seduction of a woman (par 825 *BGB*) and liability for defective buildings (par 836 *BGB*): Zweigert and Kötz 293; Markesinis 23-24 676-692; Medicus 400-404 352 353-355 376-378 382-384; Staudinger 824 447-496 498-504; Hoffman and Hill-Arning 30-32.

18 For example the *Luftverkehrsgesetz* (Air Traffic Act) of 1936, the *Strassenverkehrsgesetz* (Road Traffic Act) of 1952 and the *Arzneimittelgesetz* (Pharmaceutical Products Act) of 1976: *Cf* Markesinis 692-710; Medicus 331 381 385-393.

19 The various legal relationships involved was pointed out in ch 2 par 10.2 *supra*.

regulated by the provisions of paragraph 831 *BGB* is also considered.[20]

The three basic types of liability regulate liability that arises as a result of injury caused in an unlawful and blameworthy manner which violates a legal interest of the victim,[21] the contravention of a protective law,[22] and the intentional causing of unlawful damage;[23] vicarious liability is also discussed.[24] Liability in terms of paragraph 826 *BGB* is not relevant to this discussion of ES liabilities because of the element of intention.[25]

1.1.3 Joint wrongdoers

In terms of paragraphs 830 I and II *BGB*, joint wrongdoers (*Gesamtschuldner*) who acted in common design are jointly and severally liable for damage caused irrespective of their individual contribution.[26] The situation with regard to several concurrent wrongdoers (*Nebentäterschaft*)[27] is not specifically provided for in the BGB, but according to Markesinis, it will be treated similarly to joint wrongdoers which

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20 On vicarious liability in general, *cf* Markesinis 676-685; Medicus 375-378; Zweigert and Kötz 324-330.

21 Par 823 I *BGB*.

22 Par 823 II *BGB*.

23 Par 826 *BGB*.

24 Par 831 *BGB*.

25 Liability for intentional conduct is excluded from the scope of this study: ch 1 par 1.4 *supra*. Martinek points out that although par 826 *BGB* can serve as a basis for tortious product liability, its application is in practice restricted to very few cases: 1995 *TSAR* 630-631. The reason is that the provision requires the defendant to have caused the damage in a wilful and malicious manner with a high degree of reprehensibility, which is not commonly found in the situation of product liability.

26 Markesinis 906; Medicus 407-409.

27 This refers to the situation where several wrongdoers caused the whole or part of the damage without being in consort.

means that in the absence of proof of what damage each tortfeasor caused, the courts will hold all of them responsible for the full extent of the damage.[28] Contribution among wrongdoers is possible in terms of paragraph 840 *BGB*.[29]

1.2 Software liability

In the case of damage caused by the wrongful and negligent use of an ES, liability in terms of paragraph 823 I *BGB*, which is analogous to the general delictual action in South African law,[30] may ensue if an infringement of one of the protected rights specified in paragraph 823 I *BGB* has taken place.[31] This action will be available to the plaintiff in case of damage caused by a defective ES, the incorrect use of an ES as well as the non-use of an ES. However, although cases involving delictual liability incurred by the use of software have not yet been before the German courts, German computer law commentators[32] are of the opinion that damage caused by the use of defective computer software should rather be addressed in terms of the principles relating to product liability (*Produkthaftung*):[33]

> Die Regeln der Produkthaftung werden bei Computerleistungen eine bedeutende Funktion haben. Rechtlich bilden die Regeln der Produkthaftung ein wichtiged Auffang becken für alle Fälle, die durch die Vertragshaftung nicht erfasst werden, inbesonders die technisch unvermeidbaren Fehler.

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28 Markesinis 906; Medicus 406-407.

29 *Ibid.*

30 See ch 3 par 3.1 *supra*.

31 For example, in the case where a user is bodily injured by over-exposure to a radiation machine driven by an ES, ie an ES Machine. In such a case the user's protected rights concerning her body and health are injured: see par 2.2.1 *infra*.

32 Heussen (2) 48 2; Junker 209.

33 Heussen(2) 48 2.

These principles are regulated by the provisions of the general delictual action in paragraph 823 I *BGB*, the protection against violation of statutory regulation in paragraph 823 II *BGB* and the 1989 *Produkthaftungsgesetz:PHG* (Product Liability Act).[34] The injured party may *inter alia* institute an action based on paragraph 823 II *BGB* against a manufacturer who culpably violated a *Schutzgesetz* (a special statutory provision intended for the protection of others).[35] In the area of product liability, the following statutes *inter alia*, have been recognised as protective laws: the *Arzneimittelgesetz* (Pharmaceutical Products Act), the *Gerätesicherheitsgesetz* (Machine Safety Act) and the *Pflanzenschutzgesetz* (Plant Protection Act).[36]

The question whether computer programs are *Sachen* in terms of the *BGB*[37] has to be decided first in order to determine whether they qualify as products for purposes of product liability.[38] The reason is that both in terms of the traditional product liability principles developed under paragraphs 823 I and II *BGB*, as well as in terms of the new regime under the *PHG*, "products" are coupled with *Sachen.*[39] A *produkt* is defined as "..jede bewegliche Sache..." (any movable object).[40] *Sachen* are "..nur körperliche Gegenstande."[41] It is also obvious from the German authorities consulted, that the law of sale is made applicable to transactions for the acquisition of software which means that software needs to be regarded as a *Sache* in terms of

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34 Markesinis 79-95; Martinek 1995 *TSAR* 628.

35 *Ibid.*

36 Laws are continuously being enacted to protect consumers against defective and dangerous products as a result of the increasing legal harmonization of the EU: Martinek 1995 *TSAR* 629; see also part II par 7.1 *supra*.

37 Par 90.

38 König 71; Heussen (2) 48 2; Junker 207; Martinek 1995 *TSAR* 636.

39 *Ibid.*

40 Par 2 *PHG*.

41 Par 90 *BGB*.

paragraph 90 *BGB*.[42] A defect in the software is also regarded as a *Sachmängel* to be adressed in terms of contractual principles of the law of sale. It is therefore necessary to examine the nature of software in general in order to determine whether ES's fall within the ambit of *Sachen*.[43]

Some view computer programs as incorporeal (*unkörperlich*) goods.[44] When a contract for the acquisition of software is concluded, the software medium (*Datenträger*) is unimportant in contrast to the real object of the contract which is this incorporeal performance (*geistige Leistung*), an immaterial good. The *Datenträger* as the embodiment of the incorporeal performance only has a transport function and cannot be seen as a product. The opposing view regards computer programs as things (*Sachen/gegenstand*) by means of which various forms of programming can be distinguished.[45] The effect of this view is that software is regarded as a product to which product liability may attach. This view was confirmed by the Federal Supreme Court (*Bundesgerichthof:BGH*) which held that the software medium together with the embodied program is a corporeal thing.[46] Computer programs are often compared to books when determining whether they are corporeal.[47] According to one view, the book together with its text (*Druckschrift*), is a corporeal object (*Sachen*), and according to another, it has a dual nature (*Doppelnatur*) consisting of the corporeal text and incorporeal content (*geistigen Gut*) which can be split through for example, speech.[48] The difference between a computer program and a book lies

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42 König 71; Heussen(2) 48 2 *et seq*; Junker 207.

43 *Ibid.*

44 Software is described as "geistiges Gut", "geistige Leistung": König 73.

45 Heussen (2) 48 2-3.

46 "Datentrager mit darin verkorperten Programm stellen korperliche Sachen (par 90 *BGB*) dar": BGH VIII 325/89.

47 König 104.

48 *Ibid.*

in the ability to extract the incorporeal content of a book from the corporeal medium, by way of a lecture (*Vorlesung*) for instance, without losing the identity of the book. A computer program on the other hand, is always presented in a corporeal form in order to be functional and the content cannot be extracted in the same way as applies to a book. Although a computer program can be transmitted through data transmission (*datenfernübertragung*) without the corporeal program being transferred, it does not mean that it is incorporeal: at the end of the transferred program a corporeal program has to be produced again.[49] The information alone cannot control or drive the computer, it must be in the form of a computer program, and therefore software cannot be regarded as pure information.[50] Neither can the incorporeal content of a computer program be enjoyed in the same way as a book of poetry can if it is read out to an audience. In contrast to poetry, it is unlikely that the same pleasure can be found in the reading out of the source code of a computer program.[51]

ES's (*Expertensysteme*) as a manifestation of AI (*Künstliche Intelligenz*) is regarded as incorporeal in nature by some writers because of the knowledge base - component which contains knowledge (information) used to solve a problem.[52] König[53] points out, however, that although the knowledge base can be compared to a human mental exercise it does not differ from any other computer program with regard to the control it exercises over the computer. In this respect there is no difference between an ES and other conventional data-processing software. Furthermore, the fact that the ES

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49 König 105. See also part I pars A 1.2 B 1.2 and II par 9.1.3 *supra*; Trialle 1993 *CLSR* 217.

50 König 104. *Contra* Westerdijk's opinion at 206 *et seq* that both a book as well as a computer program can be regarded as "instructive information" neither of which is then a product for the purposes of product liability: see part II par 9.2.3 *supra*.

51 *Ibid.*

52 König 100-101.

53 *Ibid.*

shell,[54] which consists of a conventional computer program is regarded as corporeal, necessarily results in the whole ES being regarded as corporeal.[55] Junker[56] is of the opinion that the informational nature of ES's may lead to liability on the same basis as was held in the famous "comma error" case (*Kommafehler* decision).[57] In this case a patient nearly died because of an overdose of a certain drug due to a printing error in a medical textbook which prescribed 25% instead of 2,5% of the substance in question. The *BGH* refused to grant an award of damages against the publisher of the book, as it was of the opinion that the duty to take care that the information is correctly published, lies with the author and not the publisher.[58] The court nevertheless accepted that the incorrect information caused the plaintiff's damage and viewed the book as a *Sache* which was defective in its intangible form, namely that the information was incorrect.[59] From this decision it can be inferred that the intangibility of software would not prevent the *BGH* from viewing it as a product to which product liability principles may apply in cases where **incorrect information** causes the damage.[60] In other words, an incorrect ES which causes damage would then be regarded as a defective product. Although there is no direct case law on the issue whether information as such can be regarded as a product to which product liability principles apply may apply, it seems that such an eventuality is not impossible in the light of the *Kommafehler* decision.[61]

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54 See ch 2 par 8.1.3 *supra*.

55 König 100.

56 At 207.

57 BGH NJW 1970 1963. See also Westerdijk 164 *et seq*.

58 *Supra* 1964. *Contra* the position of publishers in American law: part I par 2.5 *supra*.

59 *Supra* 1964.

60 Junker 207.

61 *Supra*.

A computer program can be either an object (*Sache*) or part of an object (*Sachbestandteile*).[62] In the latter case, the program acquires the corporealness of the object of which it forms a part, for example the CD-ROM software which is built into a computer, forms a corporeal object together with the computer.[63] The corporeal nature of software is not influenced by the distinction between custom and standard software (*Individual- und Standard-Software*), nor between system - and application software.[64] Neither does the question whether the software is acquired in terms of a sale (*Kauf*) or a contract for the provision of a service (*Werkvertrag*), make a difference to the product nature of software.[65] It can therefore be concluded that software, including ES's, is of a corporeal nature and falls within the definition of a *produkt* for the purposes of product liability principles. All three types of ES's, namely the Intelligent Assistant, the Self-Help System and the ES Machine can therefore be regarded as products, and their producers may accordingly be liable where defects in the products causes harm to others.[66]

2. Paragraph 823 I *BGB*

2.1 Introduction

In terms of paragraph 823 I *BGB* a person who wilfully or negligently injures the life, body, health, freedom, property, or other similar right of another contrary to the law is bound to compensate him for any damage arising therefrom.[67] The cause of

62 Junker 207.

63 Junker 208.

64 König 115; Junker 208.

65 *Ibid.* See also Westerdijk 165.

66 See par 6 *infra*.

67 *(1) Wer vorsätzlich oder fahrlässig das Leben, den Körper, die Gesundheit, die Freiheit, das Eigentum oder ein sonstiges Recht eines anderen widerrechtlich verletzt, ist dem anderen zum Ersatze des daraus entstehenden Schadens*

action giving rise to the duty to compensate for damage occurs when the following requirements are satisfied: (1) there must have been an act which violated one of the interests protected; and (2) caused damage; (3) the violation of the right must have been unlawful and not justified; and (4) the violation must have taken place intentionally or negligently.

2.2 Requirements

2.2.1 The act

The act must be conscious human behaviour which may be in the form of a positive act that violates a protected right, or an omission where there is a duty to act.[68] The rights and interests protected by paragraph 823 I *BGB* are life, body, health, freedom, property, or any "other right" (*sonstiges Recht*). "Other rights" refer to other absolute[69] rights such as the rights of an established and operating business, patents, copyrights, personality rights and privacy rights.[70]

2.2.2 Unlawfulness

Unlawfulness is established when one of the protected rights specified in paragraph 823 I *BGB* is violated or an established duty is breached without a ground of justification, such as self-defence, consent, etcetera being present. German law holds that apart from the infringement of one of the specified interests, unlawful conduct (*Rechtswidrigkeit*) also connotes behaviour without the "care" required in

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verpflichtet.

68 Medicus 344-363; Markesinis 35-67; Staudinger 123-443; Zweigert and Kötz 293-296.

69 A right is "absolute" if it is effective against all other persons. This is in contrast to relative rights such as rights arising under a contract which can only be infringed by parties to the underlying contractual relation: Martinek 1995 *TSAR* 434; Markesinis 59.

70 *Ibid.* *Cf* Medicus 344-363; Staudinger 123-443.

society.[71] The "care required in society" actually consists of the duty to safeguard the public against harm.[72] In the case of liability for omissions the duty-oriented approach becomes even more necessary. The idea that a preceding or potentially dangerous activity or state of affairs gives rise to a duty of care, originated from the development of liability for omissions, culminating in the well-known *Verkehrssicherungspflichten*.[73] The term *Verkehrssicherungspflichten* means that whenever a source of potential danger which is likely to affect the interests and rights of others is established in everyday life by an activity or through property, there is an obligation or duty to ensure protection against those risks created. For the manufacturer this general duty to safeguard the public against harm means that all protective measures which are reasonably necessary to avoid predictable harm of the consumers by the product, must be undertaken. In principal only safe products may be marketed, therefore manufacturers will be liable for defective goods produced and distributed by them.[74] If the risk of unsafe products is unavoidable, for example in the case of immanently dangerous products or new products, the manufacturer has a duty to design the product in a way that keeps that risk as low as possible and to instruct and warn consumers of the danger.[75] Violation of these duties constitutes unlawful conduct by the manufacturer.[76] Another situation giving rise to a *Verkehrssicherungspflicht*, occurs when a professional person causes damage to someone in the execution of her professional duties.[77]

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71 Zweigert and Kötz 294; Markesinis 68 ; Medicus 335; Staudinger 281-286.

72 Martinek 1995 *TSAR* 435.

73 Markesinis 75.

74 Martinek 1995 *TSAR* 435-436; Markesinis 79-95; Heussen(2) 48 4. See also par 5.4 *infra* with regard to the duties incumbent upon a producer of manufactured goods.

75 See the discussion of typical product defects: par 5.5 *infra*.

76 *Ibid.*

77 Markesinis 7 *et seq*; BGH NJW 1990 726.

2.2.3 Fault

The requirement of fault consists of either intention or negligence.[78] Negligence consists of a lack of the degree of care generally regarded as necessary in society and if the harm was caused during some specialist activity, the court looks at the degree of care exercised by the average member of that group whether they are professional or not.[79] Although the plaintiff has to prove all the elements of a claim in terms of paragraph 823 I BGB, the courts reversed the burden of proof with regard to fault in cases involving product liability.[80]

2.2.4 Causation

There must be a causal connection between the conduct and the consequential harm. Causation is determined by a two-fold enquiry, the first to establish factual causation by applying the *conditio sine qua non theory*[81] and the second to establish legal causation by applying the adequate causation theory.[82] The doctrine of adequate causal connection applied by the German courts holds that a causal connection exists when the conduct of the defendant is such that "it was apt to lead to the result which occurred, taking things as they normally happen and ignoring very peculiar and improbable situations which men of the world would not take into account".[83]

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78 Medicus 341-342; Markesinis 72; Staudinger 361-374; Zweigert and Kötz 293-294; Jauernig *et al* 264.

79 *(1) Der Schuldner hat, sofern nicht ein anderes bestimmt ist, Vorsatz und Fahrlässigkeit zu vertreten. Fahrlassig handelt, wer die im Verkehr erforderliche Sorgfalt ausser acht lasst*: Par 276 *BGB*.

80 BGHZ 51 91: see par 5.2 *infra*.

81 The "but-for" test of Common law, also known as the theory of elimination (*Hinwegdenken*). The same test is used in South African law to determine factual causation: ch 3 par 3.3.4.2 *supra*.

82 Markesinis 95-99; Staudinger 56-62.

83 RGZ 158 38.

2.2.5 Damage

Damage consists of patrimonial and non-patrimonial loss, and paragraph 823 I *BGB* sanctions the recovery of damages for personal and property injury in an unlimited amount.[84] Damages for pain and suffering are recoverable in terms of paragraph 847 *BGB*. In the context of ES liability the compensation of pure economic loss as part of the protection of the right to property in terms of paragraph 823 I *BGB* warrants further discussion. German law displays the same reluctance as the common law of Anglo-American countries, to compensate pure economic loss (*reiner Vermögenschaden*) through the law of tort.[85] The reason is the same as in Anglo-American law, namely the fear of the indeterminacy of claims and amounts potentially involved,[86] coupled with the fact that paragraph 823 I *BGB* only protects certain specified rights, which does not include a general patrimonial right because such a right is not included in the definition of a *sonstiges Recht*.[87] Although pure economic loss can therefore not be claimed in terms of paragraph 823 I *BGB*, this rigid rule of non-compensation has been relaxed in some situations, mainly through the expansion of contract law.[88] However, pure economic loss may be claimed in terms of paragraph 823 II *BGB*.[89] The exclusion of liability in negligence, including gross negligence, for damage caused to consumers is precluded.[90]

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84 Medicus 358; Markesinis 42; Staudinger 163-167; Hoffman and Hill-Arning 30.

85 Markesinis 43; Martinek 1995 *TSAR* 632-633. See also part I pars A 2.2.3 and B 2.2.4 *supra*.

86 *Ultramares Corp v Touche* 1931 255 NY 170: see part I par B 2.2.4 *supra*.

87 Markesinis 43 *et seq* ; Medicus 358; Staudinger 171. However, pure economic loss is compensable under the provisions of par 823 II *BGB* as the latter does not prescribe the protected rights: see par 3 *infra*.

88 NJW 1977 2073. See also Markesinis 49-59.

89 See par 3 *infra*.

90 Par 11(7) of the General Business Conditions Act. See Hoffman and Hill-Arning 32.

The two contractual solutions used to allow claims for economic loss are (i) contracts in favour of third parties (*Verträge zugunsten Dritter*) and (ii) the doctrine of transferred loss (*Drittschadensliquidation*). In both these methods the tort duty is shaped by the underlying contract.[91] In terms of the method described in (i), a third party C has the right to demand performance of a contract which is in existence between two other parties, A and B;[92] and in terms of the method described in (ii) contractant A is allowed to recover damages suffered by a third party C as a result of a breach of contract, from the other contractant B.[93] Contractant A may also assign her claim to the injured third party C.[94] The result of both these methods is that through the medium of contract, the plaintiff (who is not a party to the contract) succeeds with her claims (including claims for pure economic loss) and the extent of the defendant's liability remains similar to that which had been agreed to in terms of the contract.[95]

2.3 Defences

The defence of consent to injury or risk of injury (*Einwilligung*) may be advanced

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91 Markesinis 50.

92 The origin of this judge-made contractual device stems from the necessity of providing plaintiffs with greater protection against defendants who benefit from the immunity conferred by the very limited regulation of vicarious liability as found in par 831 *BGB* : see par 4 *infra*. *Cf* Markesinis 50-51.

93 This doctrine of transferred loss is based on the notion of good faith which was developed to ensure that the defaulting party in a contract does not benefit from the fact that the loss has been shifted from the creditor to the third party: RGZ 62 331. This right of the third party is controlled, lest it exposes the contractor to an unlimited number of claims, by allowing it only where the special relations between her and the creditor caused the loss to be shifted: Markesinis 55.

94 RGZ 62 331.

95 The defendant is therefore not more extensively liable towards the third party than she would have been if sued by her co-contractor. In this way the problem of indeterminacy, referred to often by the common law systems (see part I pars A 2.5 and B 2.5.2 *supra*), is overcome by German law: *Cf* Markesinis 50-58.

against a claim in terms of paragraph 823 I *BGB* as a defence excluding *Rechtswidrigkeit*.[96] Contributory fault (consisting of intention as well as negligence) of the plaintiff may be taken into account to reduce the damage suffered.[97]

3. Paragraph 823 II *BGB*

In terms of this paragraph a person who wilfully or negligently infringes a statutory provision intended for the protection of others, has the same obligation (as found in paragraph 823 I *BGB*) to compensate for personal and property damage caused by such an infringement (*Schadensersatzpflicht*), as well as the possibility to restitute pure financial loss.[98] The element of unlawfulness is contained in the violation of a protective norm (*Schutzgesetz*).[99] A *Schutzgezetz* is any legal provision which demands or prohibits a specific action or behaviour and of which the objective is the protection of the general public.[100] Such provisions include rules of private and public law as found in statutes, by-laws, food- and drug regulations, etcetera. Civil liability in terms of paragraph 823 II *BGB* exists in addition to liability arising on any other ground and may therefore overlap with liability in terms of paragraph 823 I *BGB* as well as with liability for breach of the specific enactment concerned.[101] Only harm resulting from the injury to the interest protected by the statute is compensable;

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96 Markesinis 68; Medicus 340-341.

97 Par 254 II *BGB*. See also Markesinis 103-104.

98 *(2) Die gleiche Verpflichtung trifft denjenigen, welcher gegen ein den Schutz eines anderen bezweckendes Gesetz verstösst. Ist nach dem Inhalte des Gesetzes ein Vertoss gegen dieses auch ohne Verschulden möglich, so tritt die Ersatzpflicht nur im Falle des Verschuldens eins.*

99 Medicus 363-368; Zweigert and Kötz 296-297; Staudinger 411 *et seq*.

100 Martinek 1995 *TSAR* 629.

101 See for example the "chicken pest" case, BGHZ 51 91 which involved product liability in terms of par 823 I *BGB* as well as par 823 II *BGB* because the defendant, a vaccine manufacturer, was in breach of a specific statute enacted for the protection of humans and animals: see par 5.2 *infra*.

if the statute in question is thus aimed at preventing personal injury and property damage only, pure economic loss cannot be claimed in terms of paragraph 823 II *BGB*.[102] However, because it is not necessary that a specific legal right be infringed as is required by paragraph 823 I *BGB*, pure economic loss can be the subject of a claim for compensation.[103]

As in the case of paragraph 823 I *BGB*, liability in terms of paragraph 823 II *BGB* is always fault-based.[104] Even if the protective statute provides that infringement is possible without fault, the duty to compensate arises only if some fault can be imputed to the wrongdoer.[105] However, case law has reversed the onus of proof and placed it on the defendant.[106] Fault on the part of the defendant is therefore presumed unless she can disprove it, a factor which makes an action in terms of paragraph 823 II *BGB* more favourable to a plaintiff. Further requirements for this remedy are that the violated norm is a protective norm , in other words that the injury that occurred was in fact what the legislator wished to avoid and that the plaintiff belongs to the class of persons which the legislator wanted to protect.[107] Paragraph 823 II *BGB* is an important source of product liability claims as many

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102 Zweigert and Kötz 296; Markesinis 890; Medicus 365.

103 Martinek 1995 *TSAR* 629; Hoffman and Hill-Arning 32.

104 Martinek 1995 *TSAR* 630; Markesinis 891; Medicus 366.

105 This is clear from the second part of par 823 II *BGB* which states that in cases where breach of a particular statute imposes liability irrespective of fault, additional liability will only be imposed if there was a culpable violation of the protective law: see fn 98 *supra*.

106 BGHZ 51 91; BGH NJW 1968 1279. The courts have eased the burden of proof of the plaintiff by regarding the objective violation of a *Schutzgesetz* as *prima facie* evidence that it was culpable and that there is a causal link between the violation and the damage. In this way the evidential burden is shifted to the defendant: Martinek 1995 *TSAR* 630 *et seq*.

107 Markesinis 891-894.

protective laws are viewed as protecting consumers of products.[108]

4. Vicarious liability[109]

In German law the liability of employers for the harm caused by their employees depend on whether **personal** fault on the part of the employer contributed to the damage.[110] Contrary to most other legal systems in the world, German law follows a very different approach with regard to vicarious liability: Masters are held liable for their own fault of bad selection or supervision of their servants.[111] In terms of paragraph 831 *BGB* a person who employs another to do work is bound to compensate a third party for damage caused unlawfully to the latter by such other person during performance of the work.[112] The employer will not be liable if ordinary care was exercised in the choice of the employee and if ordinary care was exercised in the supply of appliances or implements and the superintendence of the work. The consequences of this rule have the anomalous result that a claim for damages does not depend on the fault of the actor which is apparent, but on the failure of the employer to exercise sufficient control and supervision.[113] Independent contractors are not servants in terms of paragraph 831 *BGB* and

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108 Examples are the Pharmacy Products Act of 1976 (*Arzneimittelgesetz*) and the Machine Safety Act of 1968 (*Gerätesicherheitsgesetz)*: see Hoffman and Hill-Arning 32; Markesinis 89.

109 Vicarious liability is dealt with in par 831 *BGB*, regulating the liability of employers for the acts of their employees, and in par 832 *BGB* which regulates the liability of guardians for the acts of their wards: see Markesinis 676-685; Medicus 375-378.

110 Zweigert and Kötz 324; Markesinis 676; Medicus 376.

111 The reason for this is the incorrect assumption by early scholars of Roman Law that the principle of no liability without fault applied unqualified also in the case of vicarious liability: Zweigert and Kötz 325; Markesinis 677.

112 *Ibid.*

113 Zweigert and Kötz 332.

therefore employers are in principle not liable for their actions.[114] An independent contractor does not work under the supervision and control of an employer.

The rule in paragraph 831 *BGB* has been severely criticized for being unsound in policy and various methods have been developed by judges to avoid its effect.[115] One of these methods that is particularly relevant in the context of liability for ES's, is the absolute liability of a legal person for the unlawful acts committed by its organs and representatives.[116] Another method consists of holding the entity liable for its own defective organisation in terms of paragraph 823 I *BGB*, the so-called "organisational fault".[117] In a case where the plaintiff was injured by risks inherent in treatment he was receiving but not adequately warned against, the court held the hospital liable in terms of paragraph 823 I *BGB* for its failure to guide the doctors in warning patients.[118] The last method of evading paragraph 831 *BGB* is by invoking the adaptable law of contract, specifically paragraph 278 *BGB* which imposes strict liability upon the debtor for the faults of persons used in the fulfilling of contractual obligations.[119]

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114 There have however been occasions where employers were held liable for unlawful actions of independent contractors, where they were negligently selected or if they failed to control them in the exercise of their tasks: BGH JZ 1975 733. *Cf* Markesinis 679; Zweigert and Kötz 326; Medicus 373.

115 Markesinis 685; Zweigert and Kötz 330.

116 BGHZ 49 19.

117 NJW 1971 1313. See also par 5.4 *infra*.

118 BGH NJW 1956 1106. See also part I par A 3.1 supra with regard to a hospital's vicarious liability for the actions of an independent contractor.

119 Markesinis 687.

5. Product liability

5.1 Introduction

König[120] states that the delictual liability of a software producer (*Programmhersteller*) for errors (*Fehler*) in the product should be resolved by applying the principles of manufacturer's or products liability to defective computer programs (*fehlerhafte Computerprogramme*). Support for this viewpoint is also found among other German authorities.[121]

5.2 Product liability in terms of paragraph 823 I and II BGB

In the *Hühnerpest* decision[122] the court rejected all claims based on contract in circumstances relating to product liability, and held that the plaintiff only had a claim based on delict in terms of paragraphs 823 I *BGB* and 823 II *BGB*. The latter claim was based on the fact that the defendant was in breach of a statutory provision enacted for the protection of humans and animals.[123] Many instances of product liability will, in addition to a breach of duty in terms of paragraph 823 I *BGB*, constitute a breach of a protective statute as required by paragraph 823 II *BGB*, for example the *Arzneimittelgesetz* and the *Gerätesicherheitsgesetz*.[124] Product liability claims may only be instructed against the actual manufacturer or producer of the product; suppliers or other middlemen and quasi-producers such as importers, are not liable for damage caused by defective products.[125] Where the damage is

120 At 71.

121 Jaurnig *et al* 1007; Junker 210.

122 *Supra*.

123 Markesinis 501.

124 See par 5.3 *supra*.

125 BGHZ 67 359. See also Martinek 1995 *TSAR* 631.

attributed to a defective component, manufacturers of the main product may only be held liable in cases where the defect is due to the final assembly of the product, or where such components were produced according to the instructions of the main manufacturer.[126] In all other cases the manufacturer of the finished or main product is not liable for the defects of component parts.[127] (However, in terms of the new regime under the *PHG*, manufacturers of component parts and finished products are liable alike.[128])

In a product liability claim in terms of paragraph 823 I *BGB*, the different duties on which the element of wrongfulness is based, have been categorised into similar case groups as those developed in American law.[129] Different case groups, categorised according to the type of defects found in products, were developed, namely manufacture/production faults (*Fabrikationsfehler*), construction/design faults (*Konstruktionsfehler*), instruction faults (*Instruktionsfehler*) and observation faults (*Entwicklungsfehler*).[130]

The difference between the application of paragraphs 823 I *BGB* and II *BGB* lay in the onus of proof, which was changed by the Hühnerpest decision.[131] If the claim is instituted in terms of paragraph I, the plaintiff must prove the manufacturer's fault, whereas if it is brought in terms of paragraph II, the onus is reversed and the

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126 The reason is that the manufacturer has a duty to check and test the components properly before using it: BGH NJW 1985 2420; BGH NJW 1980 121.

127 Martinek 1995 *TSAR* 633.

128 Par 4(1) *PHG*: see par 5.6.4 *infra*.

129 See part I par A 2.8 *supra*.

130 Markesinis 90-94; Junker 210-211; Martinek 1995 *TSAR* 438; Medicus 44-49; KÖnig 216; Hoffman and Hill-Arning 30-31; Westerdijk 145. For a discussion of these case groups in German law, see par 5.5 *infra*.

131 See par 5.3 *infra*.

defendant must show that the defect in the product is not due to her fault.[132] As the onus of proving the defendant's fault has already been reversed with regard to paragraph 823 II *BGB*, the court in the *Hühnerpest* case[133] found no reason why it couldn't also be done with regard to paragraph 823 I *BGB*, all the more so when regard is had to the policy reasons involved[134] as well as the victim's difficulty of establishing what is happening in the producer's enterprise.[135] In the past, the courts aided the injured party by only requiring proof of a chain of causation which indicated an organisational fault in the manufacturer's enterprise.[136] The plaintiff only had to prove that the damage was caused by a defect in the product and then it was for the defendant to explain the causes of the defect in order to show that she was not to blame.[137] The manufacturer could then be exonerated if she proved that the defect might have arisen without any organisational fault (*Organisationsverschulden*) on her side.[138] However, in the *Hühnerpest* decision[139] the court held that the latter procedure does not sufficiently protect injured parties in cases of product liability, be they ultimate users or third parties, and in such instances the manufacturer-defendant must prove her lack of fault.

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132 Markesinis 89.

133 *Supra*.

134 Namely, the protection of consumers: see part II par 8.2 *supra*.

135 Markesinis 89; Zekoll 1989 *AJCL* 810.

136 Markesinis 500 *et seq*.

137 *Ibid*.

138 An extensive interpretation of the organizational fault concept is used by the courts to avoid the possibility of the manufacturer being exonerated in terms of the presumption of fault in selecting and supervising employees as *per* par 831 *BGB*: Martinek 1995 *TSAR* 441. See also par 4 *supra*.

139 *Supra*.

5.3 The application of contractual extensions to establish product liability

Before the *Hühnerpest* decision,[140] product liability claims were dealt with by extending the law of contract by various methods[141] such as discovering an implied guarantee towards the consumer,[142] construing a contract in favour of a third party[143] or applying the theory of "transferred loss".[144] One of the advantages of a quasi-contractual action, is that the burden of proof lies on the defendant in some circumstances, whereas in tort it always lies on the plaintiff. Another advantage is that in the case of vicarious liability, the debtor is fully liable for the faults of employees in the execution of their contractual obligations, in contrast to paragraph 831 *BGB* of tort law which only makes employers liable for the unlawful acts of their employees if they themselves were negligent in selecting or supervising them.[145]

5.4 The *Hühnerpest* decision

German theory of product liability originated in 1968 with the famous "chicken pest" (*Hühnerpest*) decision.[146] The facts of this case were that the plaintiff, a chicken-farmer, had her chickens inoculated against fowl pest by a veterinarian who used contaminated vaccine which was bought from the defendant manufacturing company. The plaintiff successfully claimed compensation from the defendant for damage

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140 *Supra.*

141 In contrast to the common law countries, the law of contract in civil law countries is much more pliable and open to expansion: Markesinis 85; Martinek 1995 *TSAR* 432-433.

142 Markesinis 85.

143 *Vertrag zugunsten Dritter*: see par 2.2.5 *supra.*

144 *Drittschadensliquidation*: see par 2.2.5 *supra.*

145 See par 4 *supra.*

146 BGHZ 51 91. *Cf* Junker 206; De Jager 228; Westerdijk 144. See also Markesinis 83-89 for the impact of this seminal judgement on German product liability law.

sustained after the death of 4000 chickens due to fowl pest which they contracted from the contaminated vaccine of the defendant. After this decision a "Schadensersatzanspruch" exists in German law against a manufacturer of defective goods in the case of personal or property damage sustained by the purchaser as a result of the defective goods where the manufacturer is unable to prove that an existing "Verkehrssicherungspflicht" has been adhered to.[147] Delictual liability protects the *Integritätsinteresse*.[148] As such it is found in the following *Verkehrssicherungspflicht*[149]:

> Wer waren in den Verkehr bringt, musst dafür Sorge tragen, das sie frei von Fehlern sind, die Leben, Gesundheit, Eigentum und andere Rechtsgüter gefährden können. Schutzobjekt der Produzentenhaftung sind bestimmte Rechtsgüter und absolut geschützte Rechte.

The main difference between product liability developed by the courts and the general law of delict in terms of paragraph 823 I *BGB* [150] is the "Umkehrung der Darlegungs-und Beweislast" (the reversal of the onus of proof).[151] As was seen in the discussion of liability based on par 823 I *BGB*, the wrongdoer's negligent (or intentional) causing of the harm must be proved by the plaintiff.[152] In product liability cases the courts **reversed** the burden of proof because of the difficulty the plaintiff has to establish the defendant's negligent (or intentional) violation of a duty when all the relevant actions take place within the risk sphere of the manufacturer.[153] In pursuance of the EU Directive on product liability,[154] the *PHG*

147 Junker 206; Medicus 47.

148 In contrast to the *Äquivalenzinteresse* of the contractual action: Junker 206.

149 Junker 207.

150 Par 2 *supra*.

151 Junker 207; Medicus 48; Markesinis 89; Martinek 1995 *TSAR* 440.

152 Par 2.2.3 *supra*.

153 See par 5.4 *infra*.

was enacted in 1989, in terms whereof a parallel regime of **strict** product liability principles came into existence.[155]

5.5 Typical defects

5.5.1 *Fabrikationsfehler*

As stated earlier,[156] a manufacturing defect refers to a defect in an individual product caused by a fault in the manufacturing process.[157] The plaintiff has to prove that damage resulted from a defect in the product which made it unsuitable to be put into circulation.[158] The producer's liability for defects in manufacture can be avoided by showing that neither the producer, nor any person in her employ were in breach of a duty of care regarding the manufacturing process.[159] The manufacturer must have taken all the steps reasonably necessary to prevent such defects from occurring. Such steps include the institution of quality control and organisational measures to ensure the elimination of human or technical failure.[160] It is possible that a manufacturer will not incur liability for an isolated defective product, a "runaway" or "stray" product, if the manufacturer can show that it would not have

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154 85/374.

155 See par 5.6 *infra*.

156 Ch 2 par 9.2.2 *supra*.

157 Markesinis 90; Martinek 1995 *TSAR* 438.

158 BGHZ 51 91 105; BGH 1973 1602. See also Medicus 46.

159 BGH NJW 1973 1602; BGH NJW 1975 1827. The burden of proof on the manufacturer is the exculpatory proof in terms of par 831 *BGB* discussed in par 4 *supra* and approximates the strict tort liability required in Anglo-American law: see part I pars A 3.1 and B 3.1 *supra*.

160 Martinek 1995 *TSAR* 438. See also ch 6 par 5.2.2.2 *infra* with regard to ISO 9000.

been revealed by any reasonably necessary measure of organisation and supervision.[161]

5.5.2 *Konstruktionsfehler*

As stated earlier,[162] a construction defect is a design defect, affecting the entire line of a product, and which is usually caused by a fundamental error in the intellectual conception of a product.[163] The producer's liability for defective design is more problematic than the previous form, *Fabrikationsfehler,*[164] since the plaintiff has to prove that the product is defective because the design is defective in such a way that it creates an unreasonable risk of danger to any user of the product.[165] The defective design must have been avoidable given the existing state of scientific and technical knowledge. The determination of standards that must be met by particular products are relevant in the context of design errors. Conformity with standards set by officially recognised legal institutions such as the *Deutsches Institut für Normung* (*DIN*) are required by many administrative regulations. For example, the *Gerätesicherheitsgesetz* of 1968 requires that all technical equipment (a term which includes safety devices, household appliances, toys, etcetera) meet certain standards when sold in Germany.[166] The Act specifically refers to "generally recognized technical principles and rules (*allgemein anerkannte Regeln der Technik*) which have to be complied with.[167] Compliance with mandatory regulations may

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161 Martinek 1995 *TSAR* 438; BGH NJW 1973 1602 1603.

162 Ch 2 par 9.2.2 *supra*.

163 Martinek 1995 *TSAR* 438; Medicus 46; König 217.

164 Par 5.5.1 *supra*.

165 BGHZ 67 359; BGH NJW 1990 906. *Cf* Markesinis 91; Heussen (1) 12 11.

166 Par 3(1) of the *Gerätesicherheitsgesetz*.

167 *Ibid*.

even afford the producer a complete defence in terms of the EU Directive,[168] subsequently enacted in the *PHG*.[169] In this regard the German Institute for quality assurance of software (*Gütegemeinschaft Software e.V.*) which prescribes minimum standards for software according to the *Stand der Technik* which can be attained through the implementation of a quality assurance system, and also acts as a certifying body for software, is relevant.[170] Although it is not mandatory for software to comply with these standards, non-compliance could constitute an indication of a design error which could have been avoided according to the state of scientific knowledge, and which could lead to the producer's liability.[171]

5.5.3 *Instruktionsfehler*

In the case of an instruction fault the producer's fault consists of a failure to warn consumers in respect of hazards of the product. Such a situation arises in particular where there is no instructional literature accompanying the product. In these circumstances the product itself is free from any defect but damage is caused through the improper use by the consumer in disregarding or neglecting to guard against the product's imminent dangers.[172] A manufacturer has a duty of care to provide adequate instructions and warnings in the case of products like poison, explosives, inflammable goods, sophisticated household goods, pharmaceutical products, etcetera.[173] The producer's liability for defective instructions arises at the time the

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168 Art 7(d) of the EU Directive: see part II par 8.3.8 *supra*.

169 Par 1(2) 4: see par 5.6.7 *infra*.

170 Herberger 1986 *IUR* 380.

171 *Ibid*. See also par B 3.3.3 *infra* with regard to the position in the Netherlands, part I par A 2.2.2 *supra* for the position in the UK and par B 2.3 *supra* for the USA, and ch 6 par 5.2.2.2 *infra* for the position in SA law.

172 Martinek 1995 *TSAR* 438.

173 *Ibid*. The warnings must be conspicuous, clear and unambigious.

product is put in circulation.[174] The duty to provide information is linked to the intended use of the product and therefore the producer is under no duty to warn against dangers arising from use of the product **other** than that which it is intended for.[175] In the case of a primary diagnosis MES for example,[176] this duty of the producer could be construed to require a warning to users of such systems that they should consult a health professional before acting on any self-diagnosed therapy.

5.5.4 *Entwicklungsfehler*

The producer's liability for development risks (also referred to as observation faults)[177] is essentially different from the types of liabilities discussed above. In these cases the product will have been manufactured in accordance with the current state of technological knowledge but subsequent developments reveal its harmful effects. The *Verkehrssicherungspflicht* relevant in this respect consists of a permanent duty of product surveillance as long as the product is being marketed (*Produktbeobachtung*).[178] This duty entails very harsh consequences for the manufacturer: Even after the product is put into circulation, the manufacturer has a duty to observe the experiences of consumers with the product and to consider any progress of science and technology in regard to the product.[179] The courts have declined to make the manufacturer carry this risk as it could hinder technological development, and therefore a reversal of the onus of proof such as in the case of a

174 BGHZ 80 186.

175 BGH NJW 1981 2514.

176 A Self-Help System: see ch 2 par 11 *supra*.

177 Martinek 1995 *TSAR* 438.

178 Medicus 46.

179 This means that the manufacturer must look out for non-obvious defects as well as for changing consumer behaviour: Martinek 1995 *TSAR* 439.

Konstruktionsfehler, does not take place.[180] This defence is also referred to as the "state-of the-art defence" of the producer and is included in the EU Directive.[181] Member states have the option to retain or delete the development risk defence from their national legislation.[182] Germany opted to retain this defence.[183] The manufacturer does, however, have a duty continually to "observe" the experiences of the consumer with the product (*Produktbeobachtungspflicht*) and to consider any progress of science and technology in regard to the product.[184] The manufacturer's duty includes having to warn consumers or even to recall the products once they become aware or should have become aware of the defect or harmful consequences that may ensue.[185]

A notable exception to the availability of this defence is contained in the *Arzneimittelgesetz*, which imposes strict liability on pharmaceutical producers that introduce drugs on the market which may have harmful side-effects that are not regarded as acceptable by current medical opinion.[186] However, liability is limited to damages arising from death or bodily injury and a maximum amount of compensation is fixed. Victims are free to claim for damages exceeding this amount in terms of the normal fault-based procedure found in par 823 I *BGB*.[187]

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180 BGH NJW 1981 1606. *Cf* Markesinis 93; Martinek 1995 *TSAR* 438.

181 Art 7(e): see part II par 8.3.8 *supra*.

182 Art 15(8): see part II par 8.4 *supra*.

183 Par 1(2) 5 *PHG*.

184 Martinek 1995 *TSAR* 439; Heussen (2) 48 20.

185 BGH NJW 1992 560.

186 Martinek 1995 *TSAR* 439; Markesinis 94.

187 Markesinis 94.

5.6 Product Liability Act of 1989 (*Produkthaftungsgesetz:PHG*)

5.6.1 Strict liability

In pursuance of the EU Directive on liability for defective products,[188] the *PHG* establishes a regime of strict product liability parallel to that regulated by paragraph 823 and 831 *BGB*.[189] The plaintiff has a choice in deciding on which regime she wishes to base her claim.[190]

5.6.2 Product

The Act is applicable to a product (*produkt*) defined as any movable good even if incorporated into another movable or immovable good.[191]

5.6.3 Defect

A product is defective if it does not provide the safety which may reasonably be expected, taking into account all the circumstances especially the presentation (instructions, advertisements, etcetera) and the use to which one could reasonably

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188 85/374.

189 On the *PHG* in general, see Junker 207 *et seq*; Medicus 49-50; Martinek 1995 *TSAR* 424-441 and 629-645; Zekoll 1989 *AJCL* 809-819; Dielmann 1990 *Hastings I&CLR* 425-436; Mathewson 1993 *L&PIB* 1285-1308; Hoffman and Hill-Arning 27-30; Westerdijk 147-151.

190 Par 15 (2) *PHG* specifically provides that the *PHG* will not affect any rights of an injured party in terms of other rules of liability. According to par 15(1) *PHG*, liability for damages arising from death or bodily injury caused by pharmaceutical products cannot be claimed in terms of the *PHG*. Such claims can only be instituted in terms of the *Arzneimittelgesetz* which imposes strict liability on the producers of defective drugs: see also par 5.5.4 *supra*.

191 Par 2 *PHG*.

expect the product to be put and the time it was put into circulation.[192] The producer must take into account any foreseeable misuse of the product which can be reasonably expected and which gives rise to a duty to warn and instruct towards the consumer. Defectiveness may consist of misleading marketing, or a lack of or improper instructions.[193] If the damage was caused in part by the fault of the injured party, a proportional reduction of liability can be effected in terms of the *PHG*.[194] A product will not be considered defective solely because a better product is subsequently put onto the market.[195]

5.6.4 Producer[196]

The producer (*Hersteller*) is defined as the manufacturer of the finished product or of a component part and the producer of any raw material.[197] The manufacturer is therefore liable for all the defects in the chain of production of the finished product, even if she only assembled the component parts or if the defects were caused by the sub-supplier's defective component parts.[198] The manufacturer of the component part is not liable though, if the defect is due to the defectiveness of the complete

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192 Par 3 *PHG*. The same "consumer expectation" test in pursuance of the EU Directive art 6(1) is used: see part II par 8.3.4 *supra*.

193 In the case of software, the specification and instruction manual is especially important: see par 5.5.3 *supra*.

194 Par 6 *PHG*.

195 Par 3(2) *PHG*. To hold otherwise, would be counter-productive for product innovation: Martinek 1995 *TSAR* 638.

196 "Producer" is referred to here in the sense of the PHG, and does not refer to the producer of an ES as discussed in ch 2 par 8.2 *supra* and defined in appendix I, although an overlap in meaning does exist: see also part II par 8.3.3 *supra*.

197 Par 4 *PHG*. In this respect the scope of potentially liable parties is considerably widened compared to traditional liability principles in terms of par 823 I *BGB*. See also Zekoll 1989 *AJCL* 812.

198 Martinek 1995 *TSAR* 635.

product or to the instructions of the manufacturer of the complete product.[199] The quasi-producer, namely any person who, by putting her name, trademark or other distinguishing feature on the product, presents herself to the consumer as the producer, is also liable in terms of the *PHG*.[200] So too is any importer of a product into the EU.[201] If the producer cannot be identified, each supplier is treated as a producer and will be liable unless the victim is informed of the identity of the producer, importer or supplier of the product within one month of such a request.[202] In the case of more than one producer so defined being liable for the same damage, their liability is joint and several.[203] Contractual exclusion of liability is not allowed in terms of the *PGH* and is declared void.[204]

5.6.5 Fault

Fault is not required.[205]

5.6.6 Damage

Damage for which a claim for damages can be instituted is limited to that arising from the death of a person, bodily injury and injury to property other than the defective product itself (*andere Sache*), which is utilised for private use.[206] Damage arising from death or bodily injury caused by the use of pharmaceutical products is excluded

199 Art 7(f) of the EU Directive enacted in par 1(3) *PHG*.

200 Par 4(1) 2 *PHG*.

201 Par 4(2) *PHG*.

202 Par 4(3) *PHG*.

203 Par 5 *PHG*.

204 Par 14 *PHG*.

205 See par 5.6.1 *supra*.

206 Par 1 *PHG*.

from the operation of the Act.[207] The criterion of private use demonstrates that product liability in terms of the *PGH* does not cover damage to commercial property. Only consumers who are natural persons and acquire products for personal or household purposes, are protected by the statute.[208] A ceiling of *DM* 160 million is placed on the total amount of compensation a defendant is liable for in the event of damage caused by a single product or more products affected by the same defect.[209] In this respect the *PHG* deviates from the provisions set by the EU Directive[210] in that a financial liability cap is set for claims arising from a single product as well as for many products with the same defect.[211] Property damage under DM 1250 cannot be claimed for in terms of the *PHG*,[212] and no recovery of pure economic loss is permitted.[213]

5.6.7 Causation

The personal and property damage suffered by the defendant must have been caused by the defect in the product.[214]

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207 Par 15(1) *PHG*.

208 Users of ES's such as the Intelligent Assistant which are specifically produced for commercial use, would therefore not qualify for protection in terms of the Act.

209 Par 10(1) *PHG*. The imposition of financial caps on claims grounded in strict liability laws is a part of German legal tradition: see Hoffman and Arning-Hill 28. An example is the *Arzneimittelgesetz*: Markesinis 892.

210 Art 16(1).

211 The EU Directive only provides for a liability cap to be put on claims arising from multiple products with the same defect: see Hoffman and Hill-Arning 28; Zekoll 1989m *AJCL* 813; Dielmann 1990 Hastings *I&CLR* 433.

212 Par 11 *PHG*.

213 See Hoffman and Hill-Arning 28; Zekoll 813; Dielmann 1990 *Hastings I&CLR* 432.

214 Par 1(1) *PHG*.

5.6.8 Defences

The *PHG*[215] contains all the defences provided for in the EU Directive,[216] including the optional state-of-the-art or development risk defence. All of these defences, if proved by the producer, may lead to non-liability in spite of all the other constituent requirements being met. These defences are the non-distribution-defence,[217] the later-defect-defence,[218] the non-commercial-purpose-defence,[219] the legal-compliance-defence,[220] the state-of-the-art-defence[221] and the sub-supplier's defence.[222] The earlier discussion of these defences in regard to the EU law is *mutatis mutandis* applicable and will not be repeated here.[223] However, some particulars with regard to the legal-compliance-defence and the development risk defence need further attention.

In terms of the legal-compliance-defence a producer is not liable for a defect in a product which is due to mandatory regulations issued by public authorities.[224] Technical standards such as *DIN*[225] are not mandatory legal provisions but only recommendations which can be adhered to voluntarily, unless such standards are

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215 Par 1(2) *PHG*.

216 See part II par 8.3.8 *supra*.

217 Par 1(2) 1 *PHG*.

218 Par 1(2) 2 *PHG*.

219 Par 1(2) 3 *PHG*.

220 Par 1(2) 4 *PHG*.

221 Par 1(2) 5 *PHG*.

222 Par 1(3) *PHG*.

223 See part II par 8.3.8 *supra*.

224 Par 1(2) 4 *PHG*: see also part II par 8.3.8 (c) *supra*.

225 See par 5.5.2 *supra*.

prescribed by a statute. They then become mandatory legal provisions.[226] Compliance with recommended standards may, however, create a rebuttable presumption that the product was not defective in terms of the consumer expectation test.[227]

With regard to the development risk defence, it must be noted that since Germany has chosen to retain this defence in terms of the option provided for by the EU Directive, no general liability for development risks exists except in terms of the *Arzneimittelgesetz* referred to above.[228] The producer's ability to discover the defect must be determined objectively, namely by asking whether the state of science and technology would have enabled a scrupulous producer to discover the defect.[229] Some commentators[230] are of the opinion that the retention of this defence has resulted in there not really being a difference between the strict product liability principles of the *PHG* and the presumed fault-principle of the traditional liability regime in terms of paragraph 823 I *BGB*. However, Dielman[231] points out that the manufacturer will only escape liability if the defect was not detectable in the light of all the relevant, objective, expert knowledge available at the time, whereas previously the manufacturer's fault had to be proven, a much harder task.

The *PHG* further provides that where it is in dispute whether liability is excluded

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226 Martinek 1996 *TSAR* 640; Heussen (1) 12 54.

227 Par 3 *PHG*: see par 5.6.3 *supra*. See Dielmann 1990 *Hastings I&CLR* 428-429; Zekoll 1989 *AJCL* 814.

228 See par 5.5.4 *supra*.

229 Because the *PGH* institutes a strict liability regime, the determination of the producer's subjective ability to discover the defect is irrelevant. See also Hoffman and Hill-Arning 28.

230 Medicus 49; Martinek 1995 *TSAR* 641; Zekoll 1989 *AJCL* 811.

231 1990 *Hastings I&CLR* 429.

pursuant to these defences, the burden of proof lies on the producer.[232] Martinek[233] notes that the defences provided for in the *PHG* express the long recognized defences in traditional German product liability law.

5.7 Summary

Product liability claims may arise under paragraphs 823 I *BGB*,[234] paragraph 823 II *BGB*[235] and the *PHG*.[236] In terms of paragraphs 823 I and II *BGB*, damages may be claimed for personal and property injury caused negligently.[237] The latter provisions of the *BGB* are referred to as the old or traditional regime of products liability. This traditional regime exists alongside the new product liability regime instituted by the *PHG* in pursuance of the EU Directive on liability for defective products,[238] in terms whereof the producers of such products are held strictly liable for the personal and property damage caused by such a loss. Product liability in terms of the new regime is now strict in theory as well as in practice, except for development risks in non-pharmaceutical products.[239]

A product liability claim may be based on paragraph 823 I *BGB* only if an infringement of the specified rights of the injured party has occurred.[240] This will

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232 Par 1(4) *PHG*.

233 1995 *TSAR* 638.

234 See par 2 *supra*.

235 See par 3 *supra*.

236 See par 5.6. *supra*.

237 Damages for pain and suffering is recoverable under par 847 BGB: see par 2.2.5 *supra*.

238 85/374: see part II par 8 *supra*.

239 See par 5.6.1 *supra*.

240 See par 2.2.1 *supra*.

typically be the case where the loss caused arises from the death, bodily injury or property damage of the plaintiff.[241] Pure economic loss cannot be claimed in terms of paragraph 823 I *BGB*.[242] A claim for damages under this paragraph is unlimited.[243] The plaintiff will have to prove that her damage was caused by the defective product and that the producer acted unlawfully and with fault in this regard. Unlawfulness is present when one of the judge-made duties developed in German case law is breached by the producer.[244] These duties are all derived from the specific duty of the producer to safeguard the public against harm.[245] A claim based on product liability may only be instituted against the producer who is the actual manufacturer of the defective product.[246] In the context of software, the manufacturer-producer actually refers to the developer of the software (and ES).[247] In the case of a product consisting of component parts, the manufacturer of each component is liable for the defect in that component.[248] Although liability in terms of paragraph 823 I *BGB* is fault-based, the courts have come to the aid of the plaintiff in product liability cases and reversed the onus of proof of fault.[249] Once the plaintiff has proved that her damage was caused by a defective product of the producer, the latter must prove that the defect was not due to her fault. The exclusion of liability in negligence is not permitted towards consumers.[250] The

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241 *Ibid.*

242 *Ibid.*

243 See par 2.2.5 *supra*.

244 See par 5.5 *supra*.

245 The *Verkehrssicherungspflicht*: see par 5.4 *supra*.

246 See par 5.4 *supra*.

247 See ch 2 par 8.2.4 *supra*.

248 See par 5.4 *supra*.

249 *Ibid.*

250 See par 2.2.5 *supra*.

defectiveness of the product is judged in terms of the safety which a consumer can expect from the ordinary use of the product.[251] German product liability law also recognises the well-known product liability defects.[252] With regard to design defects, it is noted that conformity with set standards for particular products are taken into account when deciding whether such a defect could have been avoided given the existing state of scientific and technical knowledge.[253] Producers may advance the development risk defence without experiencing a reversal of the onus of proof like in cases involving other types of defects.[254] A producer is therefore not liable if the state of scientific and technical knowledge at the time the product was put on the market, was not such as to enable the existence of the defect to be discovered.[255]

Where the injury caused by a defective product also violates a protective statute, liability in terms of paragraph 823 II *BGB* may be incurred and damages may be claimed accordingly.[256] A product liability claim based on paragraph 823 II *BGB* may be instituted against the producer of a defective product where the latter is at the same time in breach of a *Schutzgesetz* enacted for the protection of consumers. Damages may be claimed for personal, property and pure economic loss if such loss arises from the injury protected in the statute,[257] provided that fault on the part of the producer with regard to the causing of damage can be proved.[258] In this regard

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251 See par 5.5 *supra*.

252 Namely manufacturing defects, design defects, failure to warn defects and development risk defects: see also part I pars A 2.8 and B 3.2.3 *supra*.

253 See par 5.5.2 *supra*.

254 See par 5.5.4 *supra*.

255 *Ibid.* This defence is also known as the state-of-the-art defence: see part I A par 3.2.2.2 *supra*.

256 See par 5.4 *supra*.

257 See par 3 *supra*.

258 This is the case even when the protective statute provides for an infringement without fault: see par 3 *supra*.

the courts have also eased the burden of the plaintiff by holding that the violation of the *Schutzgesetz* constitutes *prima facie* evidence that it was done with fault and that the violation caused the damage.[259] The evidential burden then shifts to the producer to show the absence of fault or causation.

In terms of the *PHG*, the injured plaintiff need only prove that a product distributed after January 1990[260] is defective and that there is a causal connection between it and the injury caused, whereupon personal and private property damage will be recompensed without the necessity of proving any fault on the part of the defendant.[261] Liability for death and personal injury is limited to an amount of *DM* 160 million and with regard to property damage, a threshold limit of *DM* 1250 exists.[262] Damages for pain and suffering, pure economic loss and damage to commercial property can only be claimed in terms of the traditional fault liability regime imposed by the *BGB*.[263] Unlike the position under the traditional liability regime constituted by paragraphs 823 I and II *BGB*, a claim in terms of the *PHG* may be instituted against a wide variety of possible defendants including importers, suppliers and anyone holding themselves out as producer of the product by labeling it with their name or trademark.[264] An area of contention is the controversial decision not to impose liability for development risks which, coupled with the application of the safety expectation test in the case of design and failure to warn defects, are factors which still emphasise individual fault as a requirement for liability.[265] In other words, much the same results as under established tort

259 See par 3 *supra*.

260 This is the date on which the Act came into operation: par 16 *PHG*.

261 See par 5.6.1 *supra*.

262 Pars 823 I and II *BGB*: see par 5.6.5 *supra*.

263 Par 5.6.5 *supra*.

264 See par 5.6.4 *supra*.

265 See par 5.5 *supra*.

principles are achieved.[266]

According to Markesinis[267] and Martinek[268] it is doubtful whether the two regimes will in practice give rise to different results as the courts' development of tortious product liability based on the fault principle closely approximates the no-fault approach of strict product liability.[269] The reasons are the reversal of the burden of proof in regard to the producer's negligent violation of duty applicable in tortious product liability in terms of paragraph 823 I *BGB*,[270] and the high requirements set by the courts to discharge this burden, which almost always results in a failure by the producer to succeed in raising a successful defence.[271]

6. Conclusion

Liability for software in German law may be addressed through actions based on the general delictual liability provision contained in paragraph 823 I *BGB*, the protective norm regulation in paragraph 823 II *BGB*, the vicarious liabiliy provision contained in paragraph 831 *BGB*, and the strict liability provisions of the *PHG*.

6.1 The use of a defective expert system

Liability for software in German tort law clearly revolves around products liability.[272] German computer law sources have no difficulty in classifying all software, even AI

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266 See Zekoll 1989 *AJCL* 816.

267 At 546.

268 1995 *TSAR* 644.

269 See par 5.4 *supra*.

270 Par 5.4 *supra*.

271 Martinek 1995 *TSAR* 644.

272 See par 1.2 *supra*.

software such as ES's which are acknowledged to consist mainly of information, as products.[273]

The professional liability of software producers, outside of contractual liability, is not contemplated by any of the sources consulted, and there is no indication that the software industry in Germany is formally recognised as a profession. On the contrary, commentators urge injured plaintiffs to base their software liability actions for damages on a products liability regime.[274]

6.1.1 Liability of the producers

In the case of damage caused by the use of a defective ES, the producers will be liable in terms of **product liability** principles towards the injured party.[275] Such a claim may be based on the traditional product liability regime developed in terms of the general tortious liability provisions contained in paragraphs 823 I *BGB* or 823 II *BGB*, or on the new regime constituted by the *PHG*, provided all the necessary requirements for each of the distinctive actions have been met.[276] The differences between the two regimes have already been stated and will not be repeated here, save to point out the main advantages of a claim in terms of the *PHG*, which consist firstly of the fact that fault does not have to be proved and secondly, of the fact that there is a wider variety of potentially liable defendants.[277] The main disadvantages of such a claim are the inability to claim for pure economic loss and non-patrimonial loss, and the financial limitation on the maximum amount to be claimed.[278] Claims

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273 *Ibid.*

274 See par 1.2 *supra*.

275 It was concluded that an ES can be regarded as a product: see par 1.2 *supra*.

276 See par 5.6 *supra*.

277 See pars 5.4 and 5.6 *supra*.

278 See par 5.6.5 *supra*.

for this type of damage may be instituted in terms of paragraph 823 I and II BGB.[279] Although a reversal of the onus of proof takes place in the case of a product liability action in terms of the latter provisions of the BGB, it is not as convenient as the provisions in the *PHG* which does not require proof of any fault on the part of the defendant.[280]

6.1.2 Liability of the users

An action for damages under paragraph 823 I *BGB* may be instituted by an injured party against a professional or non-professional user in cases where the use of a defective ES caused an infringement of one or more of the protected rights.[281] As there is no provision for a general patrimonial right to be protected, an action under paragraph 823 I *BGB* for pure economic loss cannot be instituted against the users. The use of a defective MES, for example, that causes bodily injury will, however, fall within the ambit of paragraph 823 I *BGB*. The plaintiff will have to prove that the user acted unlawfully by not complying with a duty of care, which duty is established by the courts through the development of various *Verkehrssicherungspflicten*.[282] In the case of a professional user, a duty of care exists towards clients, which duty may include the testing and checking of an aid such as an ES before using it.[283] The fault of the user also has to be proved.[284] In the event that a *Schutzgesetz* was violated during the use of a defective ES causing damage, a claim based on par 823 II *BGB* may be instituted by the plaintiff.[285]

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279 See pars 2.2.5 and 3 *supra*.

280 See par 5.6.1 *supra*.

281 See par 2.1 *supra*.

282 See par 2.2.2 *supra*.

283 *Ibid*.

284 See par 2.2.3 *supra*.

285 See par 5.4 *supra*.

6.2 The incorrect use of a sound expert system

In the case of damage caused by the incorrect use of an ES, a cause of action based on paragraphs 823 I and II *BGB* may be instituted against the user if all the requirements have been met.[286]

6.3 The non-use of an expert system

The non-use of an ES will be actionable under paragraph 823 I *BGB* if one of the protected interests have been violated, the defendant has acted unlawfully and negligently by not using the ES and such non-use has caused damage to the plaintiff.[287] Whether the non-use is seen as an omission or positive negligent conduct, unlawfulness will be determined by the current *Verkehrssicherungspflicten.*[288] If the non-use of an ES violated a *Schutzgesetz*, damage caused by such violation may be claimed in terms of paragraph 823 II *BGB.*[289]

286 See pars 2.2 3 and 4 *supra.*

287 See par 2.2 *supra.*

288 See par 2.2.2 *supra.*

289 See par 3 *supra.*

B. The Netherlands

1. Introduction

1.1 Delictual liability

1.1.1 General

Dutch civil law has been greatly influenced by French law. The 1838 Dutch Civil Code was virtually copied from the French Civil Code. References to German law have become more common though, and the New Dutch Civil Code bears a greater likeness to the *BGB* than to the *Code Civil* of France. The influence of the law of Switzerland and Austria is also discernible and, like in the case of Germany, there is a growing reception of European law into Dutch civil law.[290] Since 1947 jurists have been drafting a new Civil code in an effort to to adapt the Code to precedents established by case law. Book 6 of the *Nieuw Burgerlijk Wetboek* (*NBW*) contains the law of obligations: The part dealing with unlawful acts (*onrechtmatige daad*), forms the Dutch law of torts.[291] The law of torts is regulated in articles 162-197 of Book 6. The provisions of the new law (*nieuwe recht*) are based on those contained in sections 1401-1406 of the previous *Burgerlijk Wetboek* (*BW*), which have over the years elicited a substantial amount of jurisprudential literature still relevant to some areas of delictual liability. Very little literature concerning Book 6 of the *NBW* has appeared yet. For this reason reference will be made in discussion to comments applicable to articles 1401-1406 *BW* where still relevant in regard to articles 162-197 *NBW*. Book 6 *NBW* came into operation during January 1992. The main new development in the law of delict in terms of the *NBW* is a shift from liability based on fault to **liability based on risk**.[292]

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290 Hondius 34.

291 Hondius 35.

292 See par 4.1.2 *infra*.

In Dutch law there is a close relationship between insurance and delictual liability. The question is asked by various writers whether the traditional point of departure in regard to delictual liability, namely that every person is responsible for her own damage except in special circumstances, is still acceptable in these modern times.[293] It is experienced as unfair that persons should **as a rule** be held liable for damage which were not caused by themselves but by wrongdoers, and that the success of any redress against the latter, depends on whether the victim is able to prove a claim against the wrongdoer. The contention is that liability claims should be devolved onto the whole community via obligatory insurance cover.[294] This trend towards **social insurance** is discernible throughout Europe.[295] The possibility of introducing such cover for South Africa in the context of medical professional liability was also raised recently by Strauss.[296]

The issue of insurance has also arisen with regard to information technology in the Netherlands. The risk of liability may be insured against by means of an *Aansprakelijkheids Verzekering Bedrijven* (*AVB*)-policy in terms of which personal-, property- and resulting damage suffered by third parties is covered.[297] This type of insurance developed historically from a need to be insured against claims arising from damage caused by *onrechtmatige daad* in terms of sections 1401-1407 *BW*. In keeping with the form of damage typically sustained in *onrechtmatige daad*, the

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293 On the role of insurance in *aansprakelijkheidsrecht* in general, see Asser 24-27; Schut 3-14; Michiels van Kesssenich-Hoogendam 54-56.

294 *Ibid.*

295 Zekoll 1989 *AJCL* 817. See also the position in German law: par A 1.1.1 *supra.*

296 During an informal lecture at UNISA in April 1996, titled "Mediese Beroepsaanspreeklikheid: is die huidige bedeling aanvaarbaar?", Strauss ventured the opinion that an obligatory insurance scheme along the lines of the New Zealand Accident Insurance scheme, might be the answer to the growing number of professional malpractice claims against health professionals in South Africa.

297 Van der Klaauw-Koops 93; Insinger and Pot-Merlin 81.

AVB-policy is limited to personal- and property damage.[298] However, it has recently become possible for the information technology industry in the Netherlands to acquire insurance cover from the *Beroeps Aansprakelijkheids Verzekering* (*BAV*), in terms whereof also pure economic loss caused by professional malpractice (*beroepsfouten*) in respect of third parties are covered.[299] The significance of the occurrence of insurance for delictual liability is that it supports the trend of moving away from a system of compensation towards a system of indemnification, which points to a system of liability without fault.

1.1.2 Provisions regulating delictual liability

Personal liability arising from an unlawful act is regulated in one general provision: article 162 paragraph 1, which states that a person who causes damage to another person by the commission of an unlawful act (*onrechtmatige daad*) which can be attributed (*toegereken*) to the actor must compensate that other person for the damage caused.[300] A claim based on *onrechtmatige daad* in the context of liability for ES's may arise from damage caused by the unlawful acts of other persons (vicarious liability), the possession of things (*zaken*), defective products, and through the application of principles of liability regulating legal persons and their organs. Of these claims, only the actions in terms of the general provision pertaining to personal liability,[301] the provisions regulating product liability[302] and the provisions relating to vicarious liability[303] will be discussed, as they constitute the principal actions for

298 Insinger and Pot-Merlin 81.

299 Van der Klaauw-Koops 93; Insinger and Pot-Merlin 82.

300 "(Sic) is er aansprakelijkheid wanneer iemand jegens een ander een onrechtmatige daad pleegt die aan de dader kan worden toegerekend, en waardoor aan die ander schade is toegebracht." *Cf* Asser 28; Schut 15.

301 Art 162 *NBW*.

302 Arts 185-193 *NBW*.

303 Arts 169-172 *NBW*.

claims for damages arising from the use of ES's as defined.[304] With regard to the remaining causes of action, namely liability for damage caused by *zaken* and the liability of legal persons, a brief outline of the relevant provisions are given in the next two paragraphs for the purpose of identifying all applicable delictual causes of action in the event of damage caused by the use of ES's.

(a) Liability for damage caused by *zaken*[305]

In respect of liability for damage caused by things (*zaken*), the *NBW* has introduced a **major** new development in the law of tort.[306] Whereas in the past the legal regulation of such instances was based on a presumption of fault that could be rebutted by the defendant, articles 173-183 *NBW* now create **strict liability** for the possessor of *zaken*.[307] Liability is established for defective things (*gebrekkige zaken*), dangerous matter (*gevaarlijke stoffen*), dangerous buildings (*gevaarlijke opstallen*) and animals (*dieren*). The possessor of each of these things is held strictly liable if the *zaak voldoet niet aan de eisen die men daaraan in de gegeven omstandigheden mag stellen, een bijzonder gevaar voor personen of zaken oplevert en dit gevaar zich verwezenlijkt*,[308] except where the *zaak* is used in the practising of a business in which case the person practising the business is held liable and not the possessor of the thing.[309] The possessor of a *zaak* is "degene die zaak feitelijk

304 See ch 1 4.1 *supra* for the scope and limitation of the problem statement.

305 In other countries this type of liability is treated as liability caused by dangerous activities eg *Gefährdungshaftung* of Germany and s 520 of the Restatement (Second) on Torts of the United States: *cf* Asser 146.

306 Asser 146.

307 See Schrage 1996 *THRHR* 144; Asser 141 *et seq*; Westerdijk 245-250; Schut 147 *et seq*.

308 Art 173(1) *NBW*.

309 Art 181 *NBW*.

onder zich heeft".[310] Liability of the possessor is expressly excluded in the case of damage caused by a defective product falling within the ambit of the product liability provisions enacted in articles 185-193 *NBW*.[311] Asser notes two reasons for this exclusion, namely: (i) the avoidance of double risk liability involving the possessor and the producer; and (ii) the unfairness of holding a possessor liable in cases where even the producer is not held liable, for example where the product does not comply with the definition of a *produkt*.[312] An exception is made in the following situation, namely where the producer is protected against liability in terms of the product liability guidelines because the defect did not exist at the time the product was introduced on the market.[313] In such cases, it is reasonable to expect the possessor to carry the risk of the defect as the defect may have originated through the use of the product by the possessor.[314] The possessor will then be strictly liable under these provisions relating to *gebrekkige zaken* if the product constitutes the necessary danger. The intention of the exclusion in article 173(2) *NBW* is clearly to ensure that liability for defective products which caused personal and property damage is primarily actionable in terms of article 185 *NBW*.[315] However, the provisions of article 173 *NBW* supplements the function of article 185 *NBW* in that pure economic loss and damage to commercial property caused by a defective product, may be claimed for in terms of the said article 173 *NBW*.[316] The provisions of article 173 *NBW* does not exclude a claim based on the general provision for *onrechtmatige daad* in terms of article 162 *NBW*.[317]

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310 Westerdijk 245.

311 Art 173(2) *NBW*.

312 See par 3.3.2 *infra*.

313 See par 3.3.7 *infra*.

314 Asser 156.

315 Asser 156; Westerdijk 246.

316 *Ibid*.

317 *Ibid*.

Because software is a *zaak*,[318] the provisions in terms of article 173 *NBW* will be applicable to situations where damage is caused by the use of ES's.[319] As such it can be a useful supplement to the strict product liability provisions contained in articles 185-193 *NBW*.

(b) Liability of legal persons and their organs

A claim in terms of article 162 *NBW* can be instituted against a legal person because of an unlawful act committed by one of its organs or by someone whose conduct can be regarded as the conduct of the legal person by the community.[320] In the latter instance the fault of the actor is presumed to be the fault of the legal person and therefore the legal person itself is regarded as having committed the unlawful act and is directly liable in terms of article 162 *NBW*. If in addition, the unlawful act was committed by an organ of the legal person it is possible that liability as a subordinate in terms of article 170 *NBW* exists simultaneously with liability in terms of article 162 *NBW*. As general principle it is accepted that, except where such personal liability is excluded by statute, the organ of the legal person is also liable for the damage caused along with the legal person, if its conduct was in conflict with the *zorgvuldigheidsnorm*.[321]

1.1.3 Joint wrongdoers

A distinction is made between *mededaderschap* and *schadetoebrenging in*

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318 See par 1.2 *infra*.

319 See Westerdijk 246.

320 New ground was broken in the decision of HR 1979-04-06 NJ 1980 34 where it was held that not only the conduct of an **organ** of the legal person should be regarded as the act of the legal person, but that the deciding factor is rather "of de betreffende handeling in het maatschappelijk verkeer als gedraging van de rechtspersoon heeft te gelden." *Cf* Asser 226.

321 Asser 231.

groepsverband (*in turba*). The latter concept refers to the situation where it is uncertain **which member(s)** of the group actually caused the damage, and the former concept refers to the situation where each wrongdoer caused some or a part of the damage suffered.[322] In both instances the plaintiff has a choice of defendants as all are jointly and severally liable for the damage caused.[323] Contribution is possible between wrongdoers:[324]

> De aangesprokene die de schade heeft betaald, kan regres nemen op in principe alle deelnemers aan het groepsoptreden, en wel voor gelijke delen omdat de solidariteit - grondgedachte van de groepsaansprakelijkheid - dit meebrengt, tenzij de billijkheid een andere verdeling vordert (bijv. in geval van opzet van een der deelnemers.)[325]

Action may be instituted for pecuniary as well as non-pecuniary loss (*smartegeld*).[326]

1.2 Software liability

The question whether software is a movable thing (*zaak*) or a service (*dienst*) has also elicited extensive debate among Dutch jurists.[327] If software is regarded as a *roerende zaak* it falls within the definition of a *produkt* subjected to product liability both in terms of the traditional principles as well as the new regime enacted in conformance to the 1985 EU Directive.[328] As the issue has not yet arisen in Dutch

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322 Art 6:198 lid 1 *NBW*: Schut 118.

323 *Ibid.*

324 Schut 120.

325 Art 6:315 lid 2 *NBW.*

326 Schut 188. See also par 2.2.3 *infra.*

327 Van der Klaauw-Koops 89; Stuurman and Vandenberge 1669-1672; De Raadt 172-174.

328 The EU Directive on product liability 85/374: see part II par 8 *supra.*

courts, it may even be that the ECJ (European Court of Justice) will eventually clarify the legal status of computer programs.[329] The arguments against software as a product are similar to those advanced by German and EU law commentators,[330] namely that software is incorporeal and therefore not a movable object; that it is tantamount to information and information as such was definitely not contemplated by the EU to be within the framework of a product; that it is a service and therefore definitely outside the ambit of the EU Directive; and that, were it the intention of the European legislator to include software as a product it would have explicitly stated so as it did with electricity.[331]

In contrast to these objections are the pragmatic opinions of Verkade[332] who connects the nature of software to the nature of the medium on which it exists (it is commonly accepted by Dutch jurists that the *drager van software* consists of a *roerende zaak*, even if it is transmitted electronically via the computer); and Stuurman and Vandenberghe[333] who find it impossible not to view software as a product in the light of the very crucial socio-political motivation for the issuing of such a directive by the EU namely the protection of consumers. According to them it is illogical to accept that it was intended to provide protection in the case of all consumer products except software. The only reason why it was not specifically provided for is that the

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329 Van der Klaauw-Koops 88.

330 See par A 1.2 and part II par 9.1 *supra*.

331 *Cf* art 1 of the EU Directive 85/374 as well as art 6:187 *NBW*, which specifically includes electricity within the definition of a product.

332 Cited by Van der Klaauw-Koops 89.

333 1988 *NJB* 1672. They raise the following interesting question at 1671: "hoeveel juridische waarde moet worden toegekend aan het onstoffelijke karakter van software..... wat het recht als een zaak beschouwt, wordt uitsluitend bepaald door de eisen van het praktisch rechstleven".

The relevance of the **corporealness** of things in the light of technological developments is also questioned by Katsh 3-20 in his exposition of the new technological environment and the new interpersonal and institutional relationships that it fosters.

EU drafters did not have enough knowledge of new technology.[334] According to the latter commentators, software is a product to which product liability principles apply. Westerdijk,[335] whose theory was discussed under the exposition of product liability according to the EU Directive,[336] draws a distinction between software that is *beslissingsondersteunend* (**supporting decision making**), which he states is not a product, and software that is *beslissingssturend* (**directing decision making**) which, according to him, is a product. In my view the Dutch courts will follow the pragmatic opinion of Verkade and Stuurman and Vandenberghe in holding software to be a product. Neither do I think that the courts will follow Westerdijk's theory of distinction between *beslissingsondersteunend* and *beslissingssturend* software because, as stated earlier,[337] the fact that an intervening user breaks the causal chain between a defective product and the resulting damage has no bearing on the nature of the software; it still remains a product but the requirement of causation may be excluded.

2. *Onrechtmatige daad* in terms of article 162 *NBW*

2.1 Introduction

From the provisions of article 162 *NBW* five requirements of a delict can be distinguished: unlawful act (*onrechtmatige daad*), fault (*toerekenbaarheid*), damage (*schade*), causation (*oorzaak*) and the theory of relativity (*relativiteit*).[338] Although the last mentioned requirement is treated as a seperate element by Asser, it actually forms part of the first requirement, namely that of *onrechtmatige daad*, under which

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334 1988 *NJB* 1671-1672. See also Triaille 1991 *CL&P* 217-224 and 1993 *CLSR* 214-228 as well as the discussion pertaining to the applicability of the EU Directive to software: part II par 9 *supra*.

335 At 81-95.

336 See part II par 8 *supra*.

337 See part II par 9.2.3 *supra*.

338 Asser 28.

heading it will be treated in this discussion.[339]

2.2 Requirements

2.2.1 *Onrechtmatige daad*

The conduct may consist of a positive action (*doen*) or a failure to act (*nalaten*). The conduct itself must be unlawful. Manufacturing a defective product does not *per se* constitute unlawful conduct, it must first be established whether the release of the defective product in the community constitutes unlawful conduct.[340] Article 162 *NBW* is not intended to regulate product liability issues arising from a defective product *per se* because of the separate articles devoted to it in the *NBW*.[341]

Unlawfulness consists of "een inbreuk op een recht en een doen of nalaten in strijd met een wettelijke plicht of met hetgeen volgens ongeschreven recht in het maatschappelijk verkeer betaamt, behouden de een en ander aanwezigheid van een rechtvaardigings grond."[342] The *ongescreven recht* refers to the general norms adhered to in society,[343] in other words, the *boni mores* or the legal convictions of the community. In qualifying conduct as unlawful, the judge does not have to state the specific norm *in abstracto*, as long as the norm is properly motivated according to the special circumstances of each case.[344] The domain of a general duty of care cannot be comprehensively specified as it is continually developing. The formulation

339 Par 2.2.1 *infra*. See also Fokkema and Hartkamp 104 who states that liability for damages in tort requires four elements: unlawfulness, fault, damage and a causal connection.

340 Asser 29-31.

341 Art 6:185 *NBW infra*.

342 Art 6:162 *NBW*.

343 Asser 45.

344 Asser 46; Schut 71.

of the *zorgvuldigheidsnorm* entails a balancing of the interests of the plaintiff and the defendant as well as the concretisation of an open-ended norm by taking into account legislation, codes of conduct, analogous cases and the legal convictions of the community.[345] The norms considered by the courts are distinguishable into three main categories; (1) those pertaining to the physical infringement of personal and property interests, (2) those pertaining to the infringement of patrimonial interests, and (3) those pertaining to the violation of immaterial interests. Article 162 paragraph 2 states that the infringement of a subjective right, an act or omission violating a legal duty, and conduct in conflict with the *maatschappelijk zorgvuldigheid* (the *ongeschreven recht*) constitutes an unlawful act.

(a) Infringement of a subjective right

In the context of this study, the most important acknowledged subjective rights are personality rights (*persoonlijkheidsrechten*) and patrimonial rights (*vermogensrechten*). Other rights include property rights (*zakelijke rechten*) and special rights (*bijzondere rechten*) such as the *bewoningsrecht* of the lessee.[346]

(b) Violation of a legal duty

Violation of a legal duty takes place not only when an act is committed in conflict of a statutory prescription or prohibition such as found in criminal regulations, but also when a legal duty of a general nature is contravened.[347] The general duties cannot be exhaustively defined as they have been recognised in a vast variety of situations of which the most frequent involve the safety of other people's person and

345 HR 1940-04-18 NJ 1941 130; HR 1983-06-24 NJ 1984 801; HR 1986-06-27 NJ 1987 191.

346 Schut 63.

347 HR 1982-09-17 NJ 1983 278.

property.[348] An example of the latter is found in building regulations, the contravention of which would be unlawful.[349]

(c) Conflict with the *maatschappelijke zorgvuldigheid* or the *ongeschreven recht*

The *ongeschreven recht* refers to the criteria introduced by the *Hoge Raad* (HR) in 1919 in the renowned *Lindenbaum-Cohen* decision,[350] namely " een handelen of nalaten dat.....indruist hetzij tegen de goede zeden, hetzij tegen de zorgvuldigheid welke in het maatschappelijk verkeer betaamt ten aanzien van eens anders persoon of goed." *Goede zeden* refers to moral norms as far as they are accepted by the social community as (*ongeschreven*) legal norms.[351] An agreement conflicting with the good morals of society will also constitute a delict towards a third party.[352] The criterion *de zorgvuldigheid die in het maatschappelijk verkeer betaamt ten aanzien van eens anders persoon of goed* is embodied in the *ongeschreven recht* referred to in article 162.[353] This criterion is explained by Asser[354] as follows:

> De mens moet rekening houden met de omstandigheden dat hij deel uitmaakt van de samenleving en behoort daarom in zijn handel en wandel

348 Fokkema and Hartkamp 104.

349 Schut 56.

350 HR 1919-01-31 NJ 1919 161. This decision ended a period of uncertainty regarding the precise content of the element of unlawfulness. See Asser 29-33 and Schut 46-51 for an overview on the historical development of the element unlawfulness.

351 Asser 44; Schut 73.

352 HR 1927-01-13 NJ 1927 279. This was in effect also found in the *Lindenbaum-Cohen* decision *supra*, where the agreement between Cohen and the servant of Lindenbaum, which was in conflict with the good morals of society, caused damage to Lindenbaum, the third party.

353 HR 1962-04-06 NJ 1965 116.

354 At 45.

> de belangen van zijn medemensen zoveel mogelijk te ontzien. Van hem kan niet verlangd worden dat hij dit steeds doet met verwaarlozing van zijn eigenbelangen, en evenmin dat hij in al zijn gedragingen ten aanzien van eens anders persoon of goed de uiterst denkbare zorgvuldigheid in acht neemt. Hij moet zijn eigen belangen en die van een ander tegen elkaar afwegen en zich daarbij laten leiden door hetgeen in de maatschappij als behoorlijk wordt aanvaard. Neemt hij - ook zonder in strijd te komen met de wet of de goede zeden of zonder inbreuk te maken op eens anders recht - niet de zorgvuldigheid in acht die in het maatschappelijk verkeer ten aanzien van eens anders persoon of goed betaamt, dan handelt hij onrechtmatig.[355]

Article 163 *NBW* has also adopted the *Schutznormteorie*[356] of the *BGB* according to which there is no civil liability if the damage caused falls outside the scope of the rule violated or it is suffered by persons whom the rule was not intended to protect.[357] The doctrine of relativity (*relativiteitsleer*) refers to the *Schutznorm* or *Normzweck*[358] doctrine of German law which states that C's act can be unlawful towards A without being unlawful towards B, with the result that loss incurred by B cannot be claimed from C in a case where the act normally protects A.[359] However, because an act can be in conflict with more than one norm at a time, it may happen that the wrongdoer incurs liability based on a statutory protective norm as well as a *zorgvuldigheidsnorm*.[360] For example, conduct in conflict with a statutory duty intended to protect A may also still give rise to a claim by injured party B because it is also in conflict with the *zorgvuldigheidsnorm* owed to the community.

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355 See the general criterion of reasonableness, the *boni-mores* test which is applied to determine unlawfulness in the SA law of delict: ch 3 par 3.3.2.1 *supra*.

356 The protective norm theory found in par 823 II *BGB*: see par 2.2.2 *supra*.

357 Fokkema and Hartkamp 104. See also par 2.2.2 *supra*.

358 See par 823 II *BGB* in terms whereof the parties held liable are those *gegen ein den Schutz eines anderen bezweckendes Gesetz verstösst*: Schut 54. See also par 2.2.2 *supra*.

359 Asser 85; Schut 51-62.

360 *Ibid.*

2.2.2 *Toerekenbaarheid*

In terms of article 162 paragraph 3 *NBW kan de onrechtmatige daad aan de dader worden toegerekend indien zij te wijten is aan zijn schuld of aan een oorzaak die krachtens de wet of de in het verkeer geldende opvattingen voor zijn rekening komt.*[361] Article 1401 *BW* provided that *aansprakelijkheid treedt in wanneer een onrechtmatige daad is gepleegd en door schuld van de dader daardoor aan een ander schade is toegebracht.* According to Asser,[362] both provisions mean that a person is held morally and physically responsible for the harmful results caused by an unlawful act. The wrongdoer is responsible for the consequences of actions for the commission of which she can be blamed and therefore the unlawful act is imputed (*toegerekend*) to her.[363] Although the plaintiff must prove the defendant's fault, it is regarded as so probable when the act and its unlawful character have been established, that the court presumes it exists until rebutted by the defendant.[364] The onus is therefore on the defendant to prove an absence of fault.

The difference between the old article 1401 *BW* and the new article 162 *NBW*, namely that *toerekening* is expressly included in the latter, means that liability for an unlawful act is now also possible without fault being present.[365] Accordingly, liability based on risk is also included in the concept of *toerekenbaarheid* in addition to the traditional fault-based liability.[366] Risk liability is determined by the convictions of

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361 "An unlawful act can be imputed to its author if it results from his fault or from a cause for which he is answerable according to law or common opinion" : translated by Fokkema and Hartkamp 105.

362 At 68.

363 Asser 68.

364 Asser 72; Fokkema and Hartkamp 105.

365 Asser 68; Schut 110.

366 *Ibid.*

the community (*verkeersopvattingen*).[367] Asser mentions various examples of situations where the community would establish liability without fault necessarily being present on the part of the wrongdoer, for example injuries sustained by spectators during sporting events, environmental damage and **product liability**.[368]

The liability of professionals (*aansprakelijkheid voor beroepsfouten*) is regulated in accordance with the ordinary principles of liability.[369] The test for *schuld* of a professional is whether the professional in question acted as a reasonable professional person would have acted (*een redelijk handelend vakgenoot*).[370]

According to Asser,[371] confusion reigns with regard to the precise meaning of *schuld* and it has been used to connote *inter alia* the blameworthiness of the wrongdoer, negligence (*onachtzaamheid*) in contrast to intention (*opzet*), as well as unlawfulness.[372]

2.2.3 *Schade*

In terms of Dutch law all damage suffered is in principle compensable.[373] Damage consists of patrimonial (*vermogenschade*) and non-patrimonial loss (*ideële schade*). *Ideële schade* is only compensated when it is sanctioned by law and if it was cuased by intentional violation of a personality right.[374] Patrimonial damage consists of

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367 *Ibid.*

368 At 83.

369 Michiels van Kessenich-Hoogendam 14.

370 Michiels van Kessenich-Hoogendam 21.

371 At 70.

372 Schut 111 notes that the concept of fault is taking on an objective character.

373 Asser 26.

374 Schut 188.

property- and personal damage (*zaak- en persoonschade*) as well as pure economic loss (*zuivere vermogensschade*).[375] According to Schut,[376] liability insurers do not provide insurance against pure economic loss and the courts have a conservative attitude in granting such compensation.[377] As stated earlier,[378] the fact of insurance also plays a role in the question of whether a claim is granted or not. Nevertheless, Dutch law does not draw a principled distinction between pure economic loss and other types of loss as is done in other jurisdictions, all kinds of damage being recognised as compensable in principle.[379]

2.2.4 *Oorzaak*

A causal relationship must exist between the act and the damage.[380] Causation consists of factual and legal causation.[381] Factual causation is determined according to the *conditio sine qua non* theory or the *hypothetische eliminatiemethode*.[382] Between 1927 and 1970, legal causation was determined according to the theory of adequate causation whereby the wrongdoer was only liable for damage that was reasonably foreseeable at the time of the commission of the delict.[383] In 1970 the *Hoge Raad*[384] held that foreseeability of damage alone was

375 Asser 26-27; Schut 197-198.

376 *Ibid.*

377 Schut 185.

378 Par 2 *supra*.

379 HR 1961-06-16 NJ 1961 444; HR 1985-04-12 NJ 1985 625. See also Asser 26; Schut 185 and 196.

380 Asser 84; Schut 78.

381 *Ibid.*

382 Schut 80.

383 Fokkema and Hartkamp 101.

384 HR 1970-03-20 NJ 1970 251.

not sufficient to meet the requirement of causation; it must also be determined whether it is reasonable to impute the damage to the wrongdoer.[385] According to Schut[386] causation consists of the following components in terms of the *nieuwe leer*:

1. een *conditio sine qua non* - verband, te bepalen via de hypothetische eliminatiemethode;

2. een feitelijke en juridische causaal verband, te bepalen aan de hand van het criterium van de objectieve waarschijnlikkeid (regel) of dat van de kansverhoging (uitzondering);

3. een toerekeningsverband, te bepalen aan de hand van ook andere factoren dan de voorzienbaarheid van de schade zoals de aard van de aansprakelijkheid en van de schade.

2.3 Defences

Conduct is not unlawful if the injured party consented thereto; the maxim *volenti non fit iniuria* applies in Dutch law.[387] "Toestemming voorkomt dat een onrechtmatige daad ontstaat."[388] Consent is therefore not regarded as a ground of justification (*rechtvaardigingsgrond*) as the latter supposes the existence of an unlawful act which, under these circumstances, does not exist.[389] Liability for unlawful conduct may be avoided by *risico-aanvaarding* (assumption of risk) if the injured parties were aware of the possibility that damage may be incurred, and therefore acted on their own responsibility.[390] Schut[391] states that there is a difference of opinion whether an assumption of risk excludes unlawfulness, or whether it precludes the existence

385 Fokkema and Hartkamp 101; Schut 97.

386 At 97.

387 Schut 74.

388 Schut 74.

389 *Ibid.*

390 *Ibid.*

391 At 77.

of an *onrechtmatige daad* because of *eigen schuld*.

3. Product liability

3.1 Introduction

It has already been shown[392] that software is regarded by most commentators as products, to which product liability principles apply. As such the provisions of articles 162 *NBW*, 173 *NBW* and 185-193 *NBW* are relevant.

3.2 Development of product liability law

As in Germany, product liability developed from case law decided on the provisions relating to *onrechtmatige daad*.[393] Liability of the manufacturer for defective products which caused personal and bodily injury was recognised by the Dutch courts as a violation of the *zorgvuldigheidsnorm*.[394] In this regard the typical case groups of product defects was also developed by Dutch courts in accordance with the *zorgvuldigheidsnorm*, namely *produktiegebreken* (manufacturing defect), *ontwerpgebreken* (design defect) and *presentatiegebreken* (presentation or "failure to warn" defect).[395]

Traditionally, the courts held that the injured consumer bore the burden of proving all elements of such a claim, including negligence on the part of the manufacturer, in accordance with the fault basis of delictual liability in terms of article 162 *NBW*.[396]

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392 See par B 1.2 *supra*.

393 Art 162 *NBW*. See also par 2.2.*supra*.

394 Hoffman and Hill-Arning 66; Schut 149. See also par 2.2.1 *supra*.

395 Westerdijk 223-229.

396 See par 2.2.2 *supra*.

However, the hardship of this burden was soon realised and in 1973 the *Hoge Raad* reversed the burden of proof in respect of the element of fault.[397] From then onwards, the claimant only had to prove that the product was put into circulation in a defective condition and that the defect caused the injury. The fault of the manufacturer is then presumed unless she can disprove it. In terms of the general provisions relating to delictual liability, product liability of the producers could be excluded provided the latter did not act in bad faith.[398] Recoverable damages include actual damages, damages for pain and suffering and for pure financial loss.[399]

3.3 *Wet Produktenaansprakelijkheid* 1990

3.3.1 Strict liability

On 1 November 1990, new legislation implementing the EU Directive on Liability for Defective Products[400] came into operation in the Netherlands.[401] The provisions were first incorporated in articles 1407a-1407j *BW* and now appear in Book 6, sections 185-193 *NBW*. As such it forms part of the law relating to *onrechtmatige daad* and exists concurrently with the traditional forms of liability discussed above.[402] The Dutch legislator accepted the EU Directive virtually without deviation,[403] thereby creating product liability based on the risk liability of the

397 HR 1973-02-02 NJ 1973 315. See also Hoffman and Arning-Hill 66.

398 Hoffman and Arning-Hill 68.

399 *Ibid.*

400 85/374.

401 *Wet Produktenaansprakelijkheid* 1990. See Van der Klaauw-Koops 88; Hoffman and Arning-Hill 65; Westerdijk 215.

402 Par 2 *supra*.

403 Van der Klaauw-Koops 88.

producer: "De producent is aansprakelijk voor de schade, veroorzaakt door een gebrek in zijn produkt".[404] The *Wet* closely follows the guidelines provided by the EU Directive, and therefore most of the discussion of EU law earlier,[405] is *mutatis mutandis* applicable here.

3.3.2 Product

A "produkt" is "een roerende zaak"[406] and "zaken zijn voor menselijke beheersing vatbare stoffelijke objecten".[407] A product is therefore a movable and humanly controllable tangible object.[408] Although the position of software has not yet been clarified by the *Hoge Raad*, it seems that software may be regarded as a product for the purposes of product liability principles.[409]

3.3.3 Defect

A product is defective if it does not provide the safety that can be expected taking into account all the circumstances, especially the presentation of the product, the reasonable use it is going to be put to and the date on which it is released to the public.[410] Van der Klaauw[411] notes that software should provide a high measure of safety because the public at large is usually ignorant of the quality of software and relies strongly on the capabilities of information technology.

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404 Art 1 of the EU Directive; art 185 *NBW*.

405 See part II par 8 *supra*.

406 Art 187 *NBW*.

407 Art 3:2 *NBW*.

408 See Westerdijk 297.

409 See par 1.2 *supra*.

410 Art 186 *NBW*.

411 At 88.

According to De Raadt[412] the only one way to prevent damage caused by defective products is through **quality assurance** and **quality control.**[413] Quality assurance influences the design as well as the production process of the product. In terms of the product liability principles established by the EU Directive, all circumstances must be considered when determining whether the design or instruction of a product provides the safety that can be expected.[414] If the producer can show that a functional quality control system was followed, it will be a factor taken into account in determining the *zorgvuldigheidsnorm* with regard to design and instruction defects and may lead to the exclusion of such a producer's liability.[415] Quality control procedures used in the information technology industry is called "certification" (*certificering*) and is done by the *Instituut voor Certificering van Informatie Technologie.*[416] Certified software is presumed to have been designed with the necessary care and produced according to current norms or standards. De Raadt[417] puts it thus:

> Certificering geeft, voor zover het om een goed kwaliteitsborgingsysteem gaat, een vermoeden dat de normen zorgvuldig zijn opgesteld en dat het produk volgens die normen is geproduceerd. Certificering hangt een norm aan het ontwerp en de instructie. Bij de afweging of het ontwerp respectievelijk de instructie de veiligheid biedt welke men mag verwachten, zal de rechter de certificering dan ook in aanmerking nemen.

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412 At 179.

413 Stuurman and Vandenberghe 1668 also refers to the quality control of software and raises the question whether software shouldn't be subjected to compulsory testing. In terms of art 7 of the EU Directive 85/374 compliance with regulating standards must be taken into account when the producer's liability is determined: see part II par 3.2.7 (d) *supra*. See also par A 5.5.3 *supra*, part I pars A 2.2.2 and B 2.2.2.3 supra and ch 6 par 5.2.2.2 *infra*.

414 Art 6(1) EU Directive.

415 See par 2.2.1 *supra*.

416 De Raadt 182.

417 At 179.

It is, however, still possible for a production fault to occur in spite of a good quality assurance system having been followed. In such a case the producer will be held strictly liable in terms of the principles created by the EU Directive of 1985.[418] Vandenberghe[419] motivates the strict liability of the producer of software as follows:

> Where human life and individual property are at stake, only the highest standards are good enough (..) We see no reason why in the computer and information age those new (software) industries should be allowed to be more negligent with regard to safety than their traditional counterparts (...) if nowadays software producers really feel that they are unable to make software which meets the standards of safety required by the directive, they should seriously consider to stay out of those areas which can create a threat to life or property (...) There is plenty of money to be made in less dangerous areas; those who want to go into dangerous ones should know what they are doing.

3.3.4 Producer

The producer is the manufacturer of the final product, the raw material or a part of the product, or anyone who puts a mark of distinction on the product. Any importer of the product into the EU is also regarded as a producer and if a producer cannot be established, the supplier is regarded as the producer.[420] This liability cannot be excluded by agreement with the injured party.

3.3.5 Damage

Only personal (*letselschade*) and property damage (*zaakschade*) other than damage to the defective product, with a further provision limiting the damage to *zaakschade* for private use, may be claimed.[421] A maximum amount of damage in terms of the

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418 De Raadt 180.

419 "Software bugs: a matter of life and liability", cited by Triaille 1993 *CLSR* 225 fn 63.

420 Art 187 *NBW*.

421 Art 190 *NBW*. See also Van der Klaauw-Koops 91.

optional provision in the EU Directive[422] is not imposed, and the lower threshold of recoverable property damage is fixed at 1263,85 *Gulden*.[423]

3.3.6 Causation

The injured party will have to prove a causal connection between the damage suffered and the defective product.[424] Causation is determined in the same way as for the *onrechmatige daad*.[425]

3.3.7 Defences

Apart from incorporating all the defences provided for in the EU Directive, the Dutch Act has also retained the development risk defence.[426] If the producer successfully raises this defence, the question immediately arises as to the unlawfulness of such releasing of defective software onto the public market, which may lead to liability in terms of article 162 *NBW*.[427]

3.4 Summary

Product liability claims may be instituted in terms of the general delictual liability provision contained in article 162 *NBW*[428] and in terms of the new strict product

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422 Art 16: See part II par 8.3.5 *supra*.

423 Hoffman and Arning-Hill 66.

424 Art 188 *NBW*.

425 See par 2.2.4 *supra*.

426 Art 185 *NBW*.

427 See par 2 *supra*.

428 See par 2 *supra*.

liability regime which was enacted in pursuance of the EU Directive[429] in articles 185-193 *NBW*.[430]

In terms of article 162 *NBW* a claim for any type of loss, including pure economic loss and non-patrimonial damage,[431] may be instituted against the manufacturer of a defective product if the distribution of such product to the community is unlawful. This will be the case if the manufacture and distribution of a defective product is in conflict with a *zorgvuldigheidsnorm* owed to the community.[432] Although liability in terms of article 162 *NBW* is fault-based, the courts have reversed the onus of proof of fault in product liability cases with the result that the manufacturer has to disprove negligence on her part once damage caused by the defective product has been shown.[433] Risk liability for unlawful conduct is in any case possible in terms of article 162 *NBW* if sanctioned by the *verkeersopvattingen*,[434] which has been done in cases of product liability.[435] Liabiliy in terms of article 162 *NBW* may be excluded by agreement.[436]

In terms of the strict liability provisions in article 185-193 *NBW*, a claim for personal and private property damage caused by defective products may be instituted against the wide range of producers defined in the provisions.[437] As the Dutch legislator

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429 85/374.

430 See par 3.3 *supra*.

431 See par 2.2.3 *supra*.

432 See par 2.2.1 *supra*.

433 See par 3.2 *supra*.

434 See par 2.2.2 *supra*.

435 See par 3.2 *supra*.

436 See par 2.2 *supra*.

437 See par 3.3 *supra*.

incorporated the provsions of the EU Directive[438] virtually word for word, the requirements are not repeated here except to note that the development risk-defence was retained but a maximum amount for damage caused by similar defects in identical products was not enacted.[439] The same criticism with regard to the practical difference between the old and new regimes of product liability advanced by commentators of German law,[440] can be noted in regard to Dutch law.

4. Vicarious liability

Responsibility for the acts of other persons are regulated by articles 169-172 *NBW*. In terms of the *nieuwe recht*, the basis of liability is not the same for all categories of persons. Some are grounded on liability based on fault, and some on risk liability.[441] However, all of them[442] confer liability on a person because of the unlawful act of another.[443] The categories of persons relevant to this discussion are employers and their subordinates (employees) as well as non-subordinate persons participating in the business as independent contractors. Employers are responsible for the unlawful acts committed by their employees performed during the execution of their duties[444] and persons carrying on a business are liable for the unlawful acts committed by their engaged independent contractors during the execution of their instructed tasks. The liability of employers for the unlawful acts of their non-

438 85/374. See part II par 8 *supra*.

439 The imposition of these provisions are optional in terms of the EU Directive: see par 8.4 *supra*.

440 See par A 5.7 *supra*.

441 Asser 73.

442 With the exception of children: Asser 73.

443 Asser 112. Although arts 169-172 *BW* refer to "fout" and not "onrechtmatige daad", the obvious relation to art 162 *NBW* implies that an "unlawful act" is meant.

444 Art 170.

subordinates committed during work done on instructions of the employers are based on the *eenheid van onderneming*.[445] The underlying reason is that it makes no difference to the injured party whether the unlawful act is committed by the subordinate of the business or by the independent contractor who was instructed to do the work.[446]

5. Conclusion

Liability for software in the Dutch law of delict is regulated by article 173 *NBW* which provides for the liability of the possessor for damage caused by *gebrekkige zaken*, the general provisions regulating *onrechtmatige daad* contained in article 162 *NBW*, the product liability provisions contained in articles 185-193 *NBW*, and the vicarious liability provisions contained in articles 169-172 *NBW*.

5.1 The use of a defective expert system

Although it has not been decisively stated, it seems that software can be regarded as a product to which product liability principles may apply.[447] One Dutch commentator,[448] distinguishes between software directing decision making[449] which is a product, and software supporting decision making[450] which is not a product.[451] In the former instance product liability principles will apply whereas in

445 Asser 136; Schut 146.

446 Art 171: *Cf* Asser 136 *et seq*; Schut 146.

447 See par B 1.2 *supra*.

448 Westerdijk: see par 1.2 *supra*.

449 Eg an ES Machine, because it has a direct material output: see ch 2 par 11 *supra*.

450 Eg an Intelligent Assistant, because it has an indirect intellectual output: see ch 2 par 11 *supra*.

451 See part II par 9.2.3 *supra*.

the latter instance the general provision relating to *onrechtmatige daad* will be applicable.[452]

During the comparative law investigation, a reference to the professional liability of the developers in case of damage caused by defective software could not be found, nor is there any indication that the software industry in the Netherlands is regarded as a profession.

5.1.1 Liability of the producers

The developers of an ES may firstly be liable in terms of *onrechtmatige daad* when damage is caused by the use of a defective ES.[453] Liability will be based on product liability[454] in which case the plaintiff only has to prove that the product was distributed in a defective condition, and that the defect caused the injury, whereupon the fault of the developer is presumed until disproven.[455] Damages for any type of loss can be claimed and liability for such damage can be excluded.[456]

An action based on strict product liability may also be instituted against the producers in terms of article 185 *NBW*.[457]

5.1.2 Liability of the users

An action for damages based on article 162 *NBW* may be instituted by the injured

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452 Westerdijk 202.

453 Art 162 *NBW*: see par 2.2 *supra*.

454 See par 3.2 *supra*.

455 See par 3.2 *supra*.

456 See par 3.2 *supra*.

457 See par 3.3 *supra*.

party against the user of a defective ES if the use of such system constitutes an unlawful act in terms of the appropriate *zorgvuldigheidsnormen*.[458] Once the unlawfulness of the act has been estasblished, the fault of the user will have to be proved unless the act is of such a nature that it can be imputed (*toegerekend*) to the user.[459] In the case of a professional user,[460] the latter's fault is determined in accordance with the conduct of a reasonable *vakgenoot*, in other words the standard of skill and competence of the profession of the defendant is taken into account when the negligence of the professional user is determined.

The injured party may also institute an action against the possessor of a defective ES in terms of article 173 *NBW* (liability for *gebrekkige zaken*) for damage suffered as a result of the use of the system in a dangerous situation.[461] This action constitutes strict liability and can only be instituted to claim damage which is not compensable in terms of the strict product liability provisions of article 185 *NBW*. The injured party will therefore only be able to claim for pure economic loss against the user of the ES as personal and property damage is actionable against the producer of the ES.[462]

5.2 The incorrect use of a sound expert system

Where damage is caused by the incorrect use of an ES, the user may be liable towards the injured party in terms of article 162 *NBW* based on the requirements of *onrechtmatige daad*, if such use constitutes an unlawful act.[463]

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458 See par 2.2.1 *supra*.

459 See par 2.2.2 *supra*.

460 Eg during the use of the Intelligent Assistant.

461 See par 1.1.2 *supra*.

462 Art 185 *NBW*.

463 See par 2.2.1 *supra*.

5.3 The non-use of an expert system

The non-use of an ES will be actionable in terms of *onrechtmatige daad* if the defendant's conduct was negligent in not using the ES and damage was caused as a result of the failure to use it.[464] The unlawfulness of the defendant's conduct will be determined according to the *zorgvuldigheidsnormen*.[465]

464 See par 2.2.1 *supra*.

465 *Ibid*.

COMPARATIVE LAW STUDY: SUMMARY

Software liability is regulated by strict products liability and liability based on negligence. In all of the legal systems investigated, the developers of software may incur strict products liability or fault-based liability in terms of the applicable traditional tort regime towards parties injured by defective software, including ES software. Depending on the various legal relationships in existence among the producers of software, the developer may also incur vicarious liability for the unlawful acts of the designers and/or the DE of the ES.[466] Under strict product liability principles, action may be instituted against the developer under whose name the software is distributed.[467] Insurance is one way in which the producer can devolute the risk of product damage onto all the consumers of the product. The EU Directive clearly adopted a "consumer's expectation" standard in terms of which the defectiveness of a product is judged by its lack of safety rather than its fitness for use.[468] The major importance of the EU Directive for its members are the no-fault liability system and the interdiction of exemption clauses.

The applicability of products liability principles to ES software depends firstly on whether software can be regarded as products. This question is of primary importance in all the legal systems investigated and spurred a fiery debate among computer law commentators as to the actual nature of software.[469] The discussion centres around the contentious issue of whether software should be regarded as a product or a service since compensation of damage caused by the former may be based on strict liability principles, whereas damage caused by a defective service is based on negligence principles. Even where product liability is based on fault, a

466 See part I pars A 3.1 and B 3.1 *supra*, part III pars A 4 and B 4 *supra*.

467 See part II par 8.3.3 *supra*.

468 See part II par 8.3.4 *supra*.

469 See part I pars A 1.2 and B 1.2 *supra*, part II par 9 *supra*, part III pars A 1.2 and B 1.2 *supra*.

claim for damages is benefitted by a reversal of the onus of proof of negligence on the part of the manufacturer.[470] Factors which play a role in the classification of software are the tangibility of the software, the functional characteristics of the software, the informational nature of software, the commercial distinctions in software and the specific application of the software. There is an interesting difference between the Dutch/German approach on the one hand and the English/American approach on the other hand: the first two countries define a product in terms of the classification of an object *goed/Sache*, whereas the Anglo-American approach centres on the **policies** on which liability is based.[471] The strict product liability regime mandated by the EU Directive makes producers liable for defects in their products without the consumers having to prove any fault or negligence on their part. The reason why the Directive imposes strict liability is found in the same policy considerations used by American courts when applying the same standard, namely that the manufacturer is able to minimize the risk of a defect, is best informed about the existence of a defect when the product was put into the stream of commerce, and can protect against liability exposure through insurance coverage, the cost of which is spread across the consumers of the product. The range of potential defendants is much wider than under the traditional contract or negligence theories of the EU countries, specifically the Netherlands and Germany.[472] This means that the injured user has a better chance of finding a solvent defendant under the EU Directive principles.[473] Product safety standards and quality assurance systems play an important role in the determination of the question whether a product is defective.[474] Compliance with the latter points to non-defectiveness as it represents the current state of safety which a consumer may expect. Non-compliance with these standards

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470 See part I pars A 2.3 and B 2.3 *supra*, part III pars A 5.4 and B 2.2.2 *supra*.

471 *Ibid.*

472 See part III pars A 5 and B 3 *supra*.

473 See part II par 8.3.3 *supra*.

474 See part I pars A 3.2.3 and B 3.2.3 *supra*, part II par 9.2.1 *supra*, part III pars A 5.6.3 and B 3.3.3 *supra*.

and production systems may also indicate the presence of negligence on the part of the developer.

Professional liability refers to the responsibility in general of the professional person in the exercise of her profession.[475] As such, it also has to do with criminal and disciplinary laws but for the purposes of this discussion, it is limited to the professional's civil liability to compensate damage caused by improper performance of professsional duties. Weir points out that in most countries, professional liability is not generally treated as a distinct topic but rather in terms of the individual professions such as physicians, attorneys, architects, etcetera. Although the bulk of professional liability is usually discussed under the law of contract, tort law plays a central role in professional liability as the exercise of professional functions **in itself imposes a duty of care**. In common law countries liabilities in contract and tort co-exist.[476] In the legal systems of other countries, professional liability is also founded on the professional's conduct in a given situation falling short of standards expected by law.[477] Professional liability is essentially the responsibility for breach of "a legal duty of care" regardless of its origin: contractual, statutory or otherwise.[478] This duty may in certain circumstances, operate in favour of third parties.[479] Although certain legal systems such as the German for example, apply contractual rules in these cases, it does not affect the true nature of this liability which is essentially tortious.

The two common elements on which liability for professional negligence is based, is

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475 Weir 6-3.

476 See ch 2 par 2 *supra.*

477 Weir 6-4.

478 *Ibid.*

479 Eg in the case of a defective Intelligent Assistant the developers who are viewed as professionals may incur professional liability towards the injured clients of the user of the ES.

(i) the violation of a duty of care; and (ii) conduct based on fault.[480]

(i) The duty of care

In the common law systems it consists of the question whether the professional owes a duty of care in the circumstances; in Germany whether there is a *Schutzinteressen*, *Schutzpflichten* or *Verkehrssicherungpflichten*; and in the Netherlands whether a *zorgvuldigheidsnorm* has been breached. The recognition of a duty of care is a matter of policy which varies from time to time and place to place. The binding effect in the absence of a contract is the confidence of the public in professionals because they profess specialized knowledge and skills and government and state reinforces this confidence by granting licenses for the practice of the different professions after official examinations of necessary qualifications. In this regard the adherence to product safety standards and quality assurance procedures are indicative of the standard of skill of the profession and non-compliance therewith may point to malpractice.[481]

(ii) Liability for fault

There still exists a trend favouring fault-based liability in contrast to other areas where liability without fault is observed.[482] The reason therefore is found in the traditional tendency of courts all over the world to allow for errors of professionals. It is realised that the injury to a professional's reputation when found negligent, is serious. On the other hand, Weir[483] points out that the increase of professional liability insurance

480 See part I pars A 2.7 and B 2.2.2.3 *supra*, part III pars A 2.2.3 and B 2.2.2 *supra*.

481 See eg the situation in the UK: part I par A 2.7.2 *supra*.

482 Weir 6-10.

483 At 7.

is causing a relaxation of the courts' special treatment of professional liability.[484] The professional is of course liable for personal fault, vicariously and as the person in charge of an organised enterprise.

The question whether the KE and the programmers, who design and build the system should be liable for computer malpractice arises. The USA has not yet reached the stage of recognition of such status.[485] Cole[486] is of the opinion that although the overall field and practice of computer programming and software engineering is growing so rapidly that an extension of common law principles may be necessary to protect the public in this area, the field can nevertheless not be regarded as a profession because of the lack of a legislative or otherwise established standard for the underlying profession of computer programmer and a software or knowledge engineer in the USA. Computer programming and software engineering in the United Kingdom is recognised as a profession that forms part of the larger engineering profession.[487] The British Computer Society (BCS) is the controlling body of software and computer engineers which falls under the larger umbrella body of the Engineering Council, a national statutory body. As such the profession is subject to professional conduct scrutiny and adheres to a set code of ethics and minimum programming standards.[488] In Germany and the Netherlands the software industry does not have professional status.[489]

According to Weir there are two basic views with regard to the purpose and effect of

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484 See part I pars A 1.1.1 and B 1.1.1 *supra*, part III pars A 1.1.1 and B 1.1.1 *supra*.

485 See part I par B 1.2 *supra*.

486 1990 *CLJ* 208.

487 See part I par A 2.7 *supra*.

488 *Ibid*.

489 See part III pars A 1.2 and B 1.2 *supra*.

the doctrine *res ipsa loquitur.*[490] In terms of the first view, as found in the United States, the doctrine is not an independent rule of evidence but only a summary of a situation in which it is inferred from the occurrence of an accident that the negligence of the defendant caused it.[491] The rule therefore simply establishes a *prima facie* case which can be rebutted by the defendant by adducing of new evidence. In contrast, English courts as well as some courts in the USA attribute a more fundamental effect to the rule of *res ipsa loquitur*, regarding it as a distinct rule of evidence in its own right.[492] The result is that in terms of this second view, a legal burden of proof is laid upon the defendant. The effect of this operation of the rule is to move away from fault towards strict liability. Weir notes that this is in line with a general policy trend found throughout common law countries, towards easing the plaintiff's burden of proving negligence in an attempt to provide increased protection to the consumer.[493] In civil law countries such as Germany, proof of fault and causation is approached differently: the court establishes a presumption of fact regarding negligence or causation as prima facie evidence which can be rebutted by the defendant. This *prima facie* evidence (*Anscheinbeweiss*) only has the result of lowering the plaintiff's burden of proof, not of reversing it.[494] In cases involving gross negligence, a direct inversion is effected by requiring the defendant to prove the absence of fault or of the causal connection between fault and injury.[495] Such a reversal of the onus of proof is applied in regard to product liability actions in terms of the traditional fault regime.[496] The practical result is that liability based on fault is abandoned for strict liability.

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490 Weir 6-58.

491 See also part I pars A 2.3 and B 2.3 *supra*.

492 *Ibid.*

493 Weir 6-59.

494 See part III par A 2.2.3 *supra*.

495 Weir 6-62.

496 See part III pars A 5.4 and B 2.2.2 *supra*.

CHAPTER 6

DELICTUAL LIABILITY ARISING FROM THE USE OF EXPERT SYSTEMS: SOUTH AFRICAN LAW

1. Introduction

This chapter deals with the third and last objective of this study, namely a discussion of the various delictual causes of action that may lie in South African law against the producers and users of ES's as defined.[1] The delictual liability will be discussed with reference to the three types of ES's already identified[2] and within the scope of use determined.[3] When delict as a possible underlying basis of liability within the ES context was discussed earlier, it was pointed out that patrimonial and non-patrimonial loss sustained by the use of ES's, are in principle actionable under the *lex Aquilia* and the action for pain and suffering[4] if the basic requirements for a delict in our law are met.[5] As exclusions and limitations of the delictual liability of the producers are frequently contained in contracts concluded with users,[6] the delictual liability identified will only be applicable between users and producers if such exclusions are absent, invalid or outlawed. In the case of injured parties not in a contractual

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1 See ch 1 par 1.4 *supra*.

2 The **Intelligent Advisor**, the **Self-Help System** and the **ES Machine**: see ch 1 par 1.1 *supra* and ch 2 par 11 *supra*.

3 The scope of use of ES's consists of (1) the use of a defective ES, (2) the incorrect use of a sound ES and (3) the non-use of an existing ES: see ch 1 par 1.4 *supra*.

4 As the discussion is limited to damage caused by **negligent** conduct only, the *actio iniuriarum* is not applicable: see ch 1 par 1.4 *supra*.

5 Ch 3 par 3.3.6 *supra*.

6 See ch 3 par 2.4 *supra*.

relationship with the producers, the limitation or exclusion of delictual liability does not normally arise.

It is evident from the comparative law study of bases of liability for ES's, as well as from the application of the general requirements for delictual liability in South African law to the situation where damage is caused by the use of ES's, that with regard to the liability of the producers, a defective ES can be equated to a defective product raising the possibility of manufacturer's or **products liability**. A defective ES can also amount to the making of a **negligent misstatement** by the producer to the user as well as to the injured third party. The **professional liability** (in the sense of delictual liability) of the producers may also come into play. With regard to the liability of the users, the use of a defective ES, the incorrect use and the non-use of an ES may result in the **professional liability** of the professional user towards the party injured by her conduct, and ordinary delictual liability in the case of a non-professional user. Damage caused by the non-use of an existing ES brings into play the rules relating to **omissions**. In the instances mentioned, harm could have been suffered by the user or by a third party or both. In the case of more than one party being delictually liable for the same damage, for instance the developer and the supplier, the claim may be instituted against any one of the two parties mentioned or against both jointly as they are joint wrongdoers who will be jointly and severally liable to the injured party.[7] Where any of the above delicts are committed by employees of the producers or users, the latter two groups will also be vicariously liable to the injured parties for the delicts committed by their employees.[8]

7 See ch 3 par 3.5.2 *supra*.

8 See ch 3 par 3.4.2 *supra*.

2. Negligent misrepresentation

2.1 Introduction

Misrepresentation is a form of *damnum iniuria datum* whereby the wrongdoer makes an incorrect or misleading representation in a wrongful and culpable manner to another person who acts on it to her detriment.[9] Neethling *et al*[10] restricts their discussion of this specific form of *damnum* to misrepresentations causing pure economic loss, "since no specific problems attach to Aquilian liability for a misrepresentation causing damage to property or impairment of personality." The reasons are firstly that in the case of personal and property damage there is a clear infringement of a subjective right which is absent in the case of pure economic loss; secondly, that in the first case, the fear of overwhelming potential liability does not arise.[11] For them, the problematic issue relating to negligent misrepresentations therefore lies in the type of damage caused, irrespective of the type of conduct which causes the harm. According to this view, liability for negligent misrepresentations may be regarded as part of the wider problem of liability for negligently caused pure economic loss.[12] Boberg,[13] again, sees the problem as revolving around the nature of the conduct causing the harm: misrepresentation consists of negligent statements and they are problematical because "words are more volatile than deeds. They travel fast and far afield. They are used without being expended and take effect

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9 *Cf* Neethling *et al* 286 *et seq*; Boberg 58 *et seq*; Van der Merwe and Olivier 311 *et seq*. A distinction must be drawn between the situation under discussion and misrepresentations which induce a contract. The latter is not relevant in this discussion: see *Bayer South Africa (Pty) Ltd v Frost* 1991 4 SA 559 (A) 570.

10 At 286.

11 *Ibid*.

12 See Boberg 61; Hutchison 1978 *SALJ* 515.

13 At 58.

in combination with innumerable facts and other words."[14] Because an inaccurate statement may easily be conveyed to many other people who act on it to their prejudice, there is a fear of "liability in an indeterminate amount for an indeterminate time to an indeterminate class",[15] which is aggravated by the propensity of misstatements to cause pure economic loss. According to Midgley,[16] it can be said that harm caused by statements is not *prima facie* wrongful and therefore other factors are relevant in determining whether liability is reasonable.

The issue is clearly to limit the availability of the remedy for negligent representations rather than to deny its existence.[17] In *Administrateur, Natal v Trust Bank van Afrika Bpk*[18] the Appellate Division confirmed that liability for negligent misrepresentations is actionable in terms of the *actio legis Aquilia*.[19] This decision ended a long history of uncertainty regarding the actionability of a claim based on negligent statements that started as far back as 1889 when our courts, in pursuance of English law,[20] simply denied such an action.[21] According to Rumpff CJ,[22] the fear of limitless liability could be allayed by the courts through giving sufficient attention to the

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14 *Per* Lord Pearce in *Hedley Byrne v Heller* [1964] AC 465: see also ch 5 part I par A 2.5 *supra*.

15 The famous words of Cardozo J in *Ultramares Corporation v Touche* (1931) 255 NY 170, 174 NE 441: see ch 5 part I par B 2.5.2 *supra*.

16 (1) 70.

17 *SA Bantoetrust v Ross en Jacobz* 1977 3 SA 184 (T) 187; *Greenfield Engineering Works (Pty) Ltd v NKR Construction (Pty) Ltd* 1978 4 SA901 (N) 915; *EG Electric Co (Pty) Ltd v Franklin* 1979 2 SA 702 (E) 705.

18 1979 3 SA 824 (A).

19 *See also Siman & Co (Pty) Ltd v Barclays National Bank Ltd* 1984 2 SA 888 (A) 904; *Bayer SA (Pty) Ltd v Frost* 1991 4 SA 559 (A) 568.

20 *Derry v Peek* (1889) 14 AC 337.

21 *Dickson and Co v Levy* 11 SC 33.

22 *Administrateur, Natal v Trust Bank van Afrika Bpk supra* 832-833.

elements of wrongfulness, negligence and causation:[23]

> Na my mening kan en behoort die eisgrond in die onderhawige saak in die uitgebreide trefgebied van die lex Aquilia geplaas te word. Hieruit sou volg dat, volgens ons heersende norme, daar onregmatigheid vereis word en skuld. Die vrees van die sg oewerlose aanspreeklikheid kan ook alleen dan besweer word, indien by elke gegewe geval dit die taak van die Hof is om te beslis of daar in die besondere omstandighede 'n regsplig op die verweerder gerus het om nie 'n wanbewering teenoor die eiser te doen nie, en ook of die verweerder in die lig van al die omstandighede, redelike sorg uitgeoefen het, onder andere, om die korrektheid van sy voorstelling vas te stel.

2.2 Requirements

2.2.1 The act

The act consists of a misrepresentation by word or deed which may be in the form of an omission[24] or a commission.[25] The existence of a misrepresentation is a factual question which depends on the circumstances.[26] In the case of an ES with an intellectual output the incorrect information that is produced by a defective ES amounts to a negligent misrepresentation on the part of the developers towards the user or a third party such as the user's client; for example where damage is caused by the use of a defective Intelligent Assistant. The developers, including the designers and the DE are the authors or **actors** of the misrepresentation. In the same circumstances the user could have made a negligent misrepresentation towards her client based on the incorrect information in the defective ES.

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23 *Supra* 832.

24 *McCann v Goodall Group Operations (Pty) Ltd* 1995 2 SA 718 (C) 722.

25 *Siman & Co (Pty) Ltd v Barclays National Bank Ltd* 1984 2 SA 888 (A) 911; *Bayer South Africa (Pty) Ltd v Viljoen* 1990 2 SA 647 (A) 652; *Administrateur, Natal v Trust Bank van Suid Afrika Bpk supra* fn 833.

26 Neethling *et al* 287.

2.2.2 Wrongfulness

Wrongfulness is found either in the infringement of a subjective right or in the breach of a legal duty.[27] In the case of negligent misrepresentations a clear-cut subjective right can usually not be identified, therefore wrongfulness lies in the breach of a legal duty.[28]

The decisive question is therefore whether the defendant was under a legal duty not to make a misrepresentation (whether in the form of a misstatement or by other conduct) to the plaintiff.[29] Another way of putting it is to ask whether the defendant was under a legal duty to furnish the correct information in the particular circumstances.[30] The existence of such a duty is determined according to the reasonableness criterion (the *boni mores*)[31] which enable the courts to develop practical guidelines from case law. From the case law it can already be deduced that there is in principle no legal duty to furnish the correct information in an informal situation.[32] A legal duty to furnish the correct information exists in the following circumstances:

(a) In case of a statutory duty to furnish the correct information.[33]

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27 See ch 3 par 3.3.2.1 *supra*.

28 Boberg 62; Neethling *et al* 288.

29 Boberg 59.

30 Neethling et al 288.

31 See ch 3 par 3.3.2.1 *supra*. See also Pretorius 229 *et seq*.

32 *Administrateur, Natal v Trust Bank van Afrika Bpk supra* 834.

33 *International Shipping Co (Pty) Ltd v Bentley* 1990 1 SA 680 (A) 694.

(b) In case of a contractual undertaking to furnish correct information[34] or where the accuracy of the information is guaranteed.[35]

(c) Where a contractual relationship exists between the parties (without the undertaking mentioned in (b) above), there is a duty *inter partes* to furnish the correct information with regard to matters arising from the contract and its implementation.[36]

(d) Where a person holds a specific public office and furnishes information in an official capacity.[37]

(e) Where a person exclusively possesses information because of a particular occupation, which information cannot be obtained in another manner.[38]

(f) Where a person furnishes information in a professional capacity.[39]

Factors (b) and (c) will be applicable in the case of a custom made ES as a contract will exist between the developers and the user of the ES.

The above mentioned factors are not a *numerus clausus*, many more such factors

34 *Herschel v Mrupe* 1954 3 SA 464 (A) 490.

35 *Administrator, Natal v Bijo* 1978 2 SA 256 (N) 261.

36 *Bayer South Africa (Pty) Ltd v Frost supra* 575.

37 *Herschel v Mrupe supra* 488; *EG Electric Co (Pty) Ltd v Franklin supra* 705; *Perlman v Zoutendyk supra* 328.

38 *EG Electric Co (Pty) Ltd v Franklin supra* 706; *Bayer South Africa (Pty) Ltd v Frost supra* 575; *Currie Motors (Pretoria) (Pty) Ltd v Motor Union Ins Co Ltd* 1961 3 SA 872 (T) 876; *Herschel v Mrupe supra* 472.

39 *Siman and Co (Pty) Ltd v Barclays National Bank supra* 913; *Lillicrap, Wassenaar and Partners v Pilkington Brothers (SA) (Pty) Ltd supra* 509. See also Pretorius 289-294.

may crystallise, and it must be remembered that the legal duty indicated by the presence of these factors, must exist towards the **particular plaintiff**. This will only be the case if the defendant, at the time of giving the information, knew or subjectively foresaw who the injured parties would be.[40] Notwithstanding the presence of these factors, the court may still refuse to find that a legal duty exists if it is of the opinion that liability could lead to a "multiplicity of actions" which could be "socially calamitous".[41] As a result of the *Lillicrap* decision[42] it also seems as if the courts, because of policy reasons, will not readily recognise a delictual action in cases where breach of contract, based on a negligent misrepresentation, caused pure economic loss. In cases where a negligent misrepresentation is made during the performance of professional duties in terms of a contract, the plaintiff will only have a contractual action for damage caused.[43]

With regard to negligent misrepresentations in the form of **statements**, even those which cause physical harm,[44] additional factors need to be considered before liability is imposed.[45] These factors include the nature of the statement and the context in which it was made,[46] the truth of the statement,[47] the purpose of the statement and

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40 *International Shipping Co v Bentley supra* 694; *Bayer South Africa (Pty) Ltd v Frost supra* 575; *EG Electric Co (Pty) Ltd v Franklin supra* 706.

41 *EG Electric Co (Pty) Ltd v Franklin supra* 706; *International Shipping Co (Pty) Ltd v Bentley supra* 94; *Siman and Co (Pty) Ltd v Barclays National Bank Ltd supra* 914.

42 *Lillicrap, Wassenaar and Partners v Pilkington Brothers (SA) (Pty) Ltd supra* 499-500.

43 *Bayer South Africa (Pty) Ltd v Frost* supra 570. See also ch 4 par 2.6 *supra*.

44 *Bristow v Lycett* 1971 4 SA 223 (RA).

45 *Administrateur Natal v Trust Bank van Afrika Bpk supra* 832-833; *Siman & Co (Pty) Ltd v Barclays National Bank Ltd supra* 913-914; *Bayer SA (Pty) Ltd v Frost supra* 568; *Standard Chartered Bank of Canada v Nedperm Bank Ltd* 1994 4 SA 747 (A) 770.

46 For example, whether the statement was made seriously and in a business context: *Siman & Co (Pty) Ltd v Barclays National Bank Ltd supra* 913.

the defendant's knowledge of the purpose, the relationship between the parties,[48] for example whether it was made in a professional capacity, the issue of reliance on the defendant's knowledge and skill in regard to the information conveyed, by third parties as well as by the plaintiff, whether the defendant took any reaonable precautions to ensure the accuracy of the statement, and any other general considerations of public policy, fairness and equity that may cause the court to deny a remedy. The nature of the harm,[49] whether the harm was foreseeable, as well as the severity and extent of the harm is important. An example of such considerations is "where a finding in favour of the plaintiff raises the spectre of limitless liability or places an undue or unfair burden upon the (defendant)".[50] Another example is the decision of the Appellate Division[51] that public policy requires a claim based on a negligent statement to be denied where damages is claimed for the breach of a contractual duty to perform professional work.

2.2.3 Negligence

Once it has been established that a duty to furnish the correct information existed, and this duty was breached, the wrongdoer acted unlawfully, and for liability to follow it must be established whether the wrongdoer acted negligently. In terms of the test for negligence, the court will ask whether the defendant acted in the manner in which

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47 Midgley (1) 70 notes that truth should not always be a defence in case of a materially false statement as there are instances where a duty could be owed not to disclose the truth about another.

48 For example, whether it is contractual.

49 Where the harm consists of pure economic loss, additional policy considerations apply: *Lillicrap, Wassenaar & Partners v Pilkington Bros (SA) (Pty) Ltd* 1985 1 SA 475 (A) 509. See also par 3.2 *infra*.

50 *Standard Chartered Bank of Canada v Nedperm Bank Ltd supra* 771. See also *EG Electric Co (Pty) Ltd v Franklin supra* 706.

51 *Lillicrap, Wassenaar & Partners v Pilkington Bros (SA) (Pty) Ltd supra* 500; *Bayer SA (Pty) Ltd v Frost supra* 570; *Indac Electronics (Pty) Ltd v Volkskas Bank Ltd* 1992 1 SA 783 (A) 796.

a reasonable person would have acted in the circumstances. In this respect the reasonable foreseeability and preventability of damage is applicable.[52] Any contributory negligence on the part of the plaintiff must also be kept in mind.[53]

2.2.4 Causation

Factual causation is determined firstly by establishing a factual causal link between the misrepresentation, the misunderstanding and the damage through applying the *conditio sine qua non* test.[54] This means that the plaintiff must have acted in a certain way because she believed the misrepresentation to be true and as a result of so acting, loss was suffered.[55] Legal causation is determined by means of the flexible criterion laid down in *S v Mokgethi*.[56] In terms of this criterion the question is whether a sufficiently close nexus exists between the wrongdoer's act and the consequence to justify the imposition of liability, taking into account policy considerations based on reasonableness, equity and justice. The existing tests for legal causation such as adequate causation, foreseeability, etcetera are factors which may play a role in using the flexible criterion.[57]

2.3 Application to expert systems

In the case of a defective ES the misrepresentation consists of wrong or incorrect information supplied by the producers to the user or a third party via the ES.[58]

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52 See ch 3 par 3.3.3.2 *supra*.

53 See ch 3 par 3.3.2 *supra*.

54 See ch 3 par 3.3.4.2. *supra*.

55 *Ibid*.

56 1990 1 SA 32 (A). See also ch 3 par 3.3.4.3 *supra*.

57 *International Shipping Co (Pty) Ltd v Bentley supra* 702-704.

58 Tapper

Because of their nature, it is only possible for a misrepresentation to occur in an ES with an intellectual output such as the Intelligent Assistant and the Self-Help System.[59] The developers would have foreseen the reliance of the users on an ES specifically designed and produced for that purpose and would therefore be liable on the basis of a negligent misrepresentation. In the case of the incorrect use of an ES, the users of such a system could also be liable on the basis of a negligent misrepresentation if they give the wrong advice due to the incorrect use of the system.

3. Pure economic loss

3.1 Introduction

Pure economic loss comprises patrimonial loss that does not result from damage to the property of the plaintiff or from injury to the person of the plaintiff.[60] Liability for economic loss may only occur if all the delictual requirements are met.[61] However, as it is usually not difficult to establish the requirements of conduct and fault in this regard, the following discussion is limited to the element of wrongfulness. Although the infringement of a subjective right does sometime occur with regard to liability for pure economic loss,[62] it is exceptional and courts almost always find wrongfulness in the breach of a legal duty.[63] In order to determine whether a legal duty to avoid

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59 See ch 2 par 11 *supra*.

60 Neethling *et al* 280 *et seq*; Boberg 103 *et seq*; *Coronation Brick (Pty) Ltd v Strachan Construction Co (Pty) Ltd* 1982 4 SA 371 (D); *SA Petroleum Refineries (Pty) Ltd v Osborne Panama SA* 1980 3 SA 653 (D); *Franschhoekse Wynkelder (Ko-op) Bpk v SAR & H* 1981 3 SA 36 (C).

61 See ch 3 par 3.3.5 *supra*.

62 Eg in the case of unlawful competition: see Neethling *et al* 281; Van der Walt 35.

63 Cases in fn 109.

pure economic loss exists, the *boni mores* test is used.[64]

3.2 The duty to avoid pure economic loss

The following factors may determine the existence of a legal duty where economic loss is caused:[65]

(a) Knowledge of damage to the plaintiff

If the defendant knew or subjectively foresaw that her conduct would cause damage to the plaintiff, the court would find that a legal duty exists.[66] In other words, regard is had to an example of a *dadersubjektiewe faktor*, namely the subjective knowledge or foresight of the defendant in terms whereof the wrongfulness of a defendant's conduct is limited to plaintiffs whose identity is known at the time of committing the act.[67] This subjective knowledge of the defendant must not be confused with the

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64 *Coronation Brick (Pty) Ltd v Strachan Construction Co (Pty) Ltd supra*; *Indac Electronics (Pty) Ltd v Volkskas Bank Ltd supra*. See also ch 3 par 3.3.2.1 *supra*.

65 These factors are not a numerus clausus, as the court in *Arthur E Abrahams and Gross v Cohen* 1991 2 SA 301 (C) 307 309 noted:

> Setting the boundaries of liability *ex delicto* for causing what has come to be styled as pure economic loss not flowing from physical damage has been a major concern of Western Courts in recent times. The problems involved in so doing are reasonably well known and I do not intend to review them generally yet again....A defendant may be held liable *ex delicto* for causing pure economic loss unassociated with physical injury but before he is held liable it will have to be established that the possibility of loss of that kind was reasonably foreseeable by him and that in all the circumstances of the case he was under a legal duty to prevent such loss occurring. It is not possible or desirable to attempt to define exhaustively the factors which would give rise to such a duty because new situations not previously encountered are bound to arise and societal attitudes are not immutable.

66 *Coronation Brick v Strachan Construction Co (Pty) Ltd supra* 386; *McLelland v Hulett supra* 464; *Indac v Volkskas Bank Ltd supra* 799; *Kadir v Minister of Law and Order supra* 743; *Arthur E Abrahams and Gross v Cohen supra* 311.

67 *Coronation Brick (Pty) Ltd v Strachan Construction Co supra* 387; Neethling et al 283-284; Boberg 146.

objective reasonable foreseeability of harm used in English tort law to establish a duty of care.[68] Such foreseeability is, in South African law used in regard to the determination of negligence.[69] In the case of ES's it can be argued that at least in the case of a custom ES, the developer would have known who the users of the system are, and therefore may be liable for the loss suffered. It can also be argued that in the case of a standard Intelligent Assistant, the developer would also have sufficient knowledge of the particular class of persons, for example doctors in the case of a MES, that will rely on the information.

(b) Practical measures to prevent the loss

The ease and affordability with which the defendant could have taken practical steps to prevent the economic loss, are taken into account.[70] In this regard the probable success of the steps, the reasonableness or not of the expenses involved and the relative ease with which such steps could have been taken, are relevant.[71] In the context of ES liability the application of product safety standards and quality assurance procedures can be regarded as relatively uncomplicated and economical measures which can be taken to help prevent loss from occurring.[72]

(c) Professional knowledge and competence

The professional defendant has a duty not to cause pure economic loss to others who

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68 *Administrateur, Natal v Trust Bank van Afrika supra* 833-834. See also ch 5 part I par A 2.2.1 *supra*.

69 Neethling *et al* 284 130.

70 *Coronation Brick v Strachan Construction Co supra* 384; *McLelland v Hulett supra* 465; *Arthur E Abrahams and Gross v Cohen supra* 312.

71 *Ibid.*

72 See par 5.2.3.2 *infra*.

rely on her expertise and knowledge.[73] The professional user will therefore be liable for such loss caused to her client during the use of an ES. If the developer of the ES is a professional, such as the DE, she will also be liable for the loss.

(d) Extent of the risk

In situations where there is a high degree of risk of economic loss, the need for protection is acknowledged.[74] The Self-Help System has a high degree of risk in the domain of financial advice and developers who produce such systems for the benefit of lay-users should insure themselves against this risk.[75]

(e) Extent of the loss

Defendants in situations which may lead to indeterminate liability or are "fraught with an overwhelming potential liabilty", or would lead to a "multiplicity of actions" which could be "socially calamitous", do not have a legal duty to avoid damage in the form of pure economic loss.[76] According to Neethling *et al*,[77] Van Aswegen[78] and Pretorius,[79] this consideration cannot be applied rationally by the courts and is in any event a factor more relevant to the element of legal causation, which is directly concerned with the extent of liability, than to wrongfulness. The nature of ES 's are

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73 This is especially true in the case of collecting bankers: *Indac Electronics (Pty) Ltd v Volkskas Bank Ltd supra*; *UDC Ltd v Bank of Credit and Commerce Zimbabwe Ltd* 1990 3 SA 529 (Z).

74 Eg in relation to a cheque: *Indac Electronics (Pty) Ltd v Volkskas Bank Ltd supra.*

75 See also (f) *infra.*

76 *Greenfield Engineering Works (Pty) Ltd v NKR Construction (Pty) Ltd supra* 916-917.

77 At 285.

78 1993 *THRHR* 192-193.

79 At 283-285.

such that it could lead to multiple actions, especially ES 's of the type embodied in the Self-Help System which is available as a standard package to the public.

(f) Insurance

The fact that the defendant can protect herself against economic loss by obtaining insurance cover, is taken into account.[80]

3.3 Application to expert systems

From the various factors discussed above,[81] it can be deduced that a legal duty to prevent the causing of pure economic loss definitely exists on the part of the producers in the case of such damage caused by an Intelligent Assistant and the Self-Help System as they would know for what purpose the ES is going to be used. Where the producer is regarded as a professional person, such as the DE or the KE, there is in any case a duty on such a defendant not to cause financial harm to others.[82] The professional user of a defective ES will also incur liability for pure economic loss on the same basis.

4. Omissions

4.1 Introduction

Our law does not recognise a general duty on an individual to take positive steps to prevent an infringement of another's interest which causes loss, since the imposition of such a general duty would place a too heavy a burden on individuals in the

80 *Indac Electronics (Pty) Ltd v Volkskas Bank Ltd supra* 799.

81 Par 3.2 *supra.*

82 See par 3.2 (c) *supra.*

community.[83] Therefore, a person does not act wrongfully when she fails to act positively to prevent harm to another.[84] Liability will only follow if there is a legal duty to act positively to prevent harm from occurring and the defendant fails to comply with this duty.[85] For this reason, it is more appropriate to make use of breach of a legal duty than an infringement of a subjective right to determine wrongfulness. The question whether a legal duty has been breached is established in terms of the objective reasonableness criterion, the *boni mores* or the general legal convictions of the community.[86]

4.2 The duty to act

In terms of the *boni mores*-test, all relevant factors which may point to the a legal duty to act must be considered, and although there is no *numerus clausus* of such factors, the following may indicate the existence of a legal duty to act positively by using an existing ES: prior conduct, control of a dangerous object and a special relationship.[87]

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83 *Minister van Polisie v Ewels* 1975 3 SA 590 (A) 596:

> As uitgangspunt word aanvaar dat daar in die algemeen geen regsplig op 'n persoon rus om te verhinder dat iemand anders skade ly nie, al sou van so 'n persoon verwag kon word, op suiwer morele gronde, dat hy daadwerklik optree om die skade te verhinder.

See also *Nkumbi v Minister of Law and Order* 1991 3 SA 29 (E) 35; *Macadamia Finance Ltd v De Wet* 1991 4 SA 273 (T) 278.

84 See Neethling *et al* 50 *et seq*; Van der Merwe and Olivier 24 *et seq*; Van der Walt 29 *et seq*; Boberg 210 *et seq*.

85 *Minister van Polisie v Ewels supra* 597.

86 *Minister van Polisie v Ewels supra* 597; *Nkumbi v Minister of Law and Order supra* 35; *Macadamia Finance Ltd v De Wet supra* 278. See ch 3 par 3.3.2.1 *supra*.

87 These factors are not indispensable for the existence of a legal duty, they only contribute to influence the convictions of the community that in those particular circumstances, the defendant has a legal duty to act positively to prevent harm: see Neethling *et al* 55 *et seq*.

(a) Prior conduct[88]

A person who creates a new source of danger through positive conduct acts *prima facie* wrongfully when she subsequently fails to prevent damage to another person.[89] Although the view that such prior conduct is an indispensable condition for liability on the ground of an omission prevailed in our law for a long time,[90] it is now clear that such conduct is only one of several considerations which may indicate the existence of a legal duty to act,[91] determined in accordance with the general reasonableness criterion.[92] An example of such prior conduct would be the situation where a doctor performed an operation which results in complications for the patient. It then transpires that the further injuries suffered by the patient as a result of the complications could have been prevented by the use of an existing MES, but the doctor failed to use the system. In such an instance the applicaton of the reasonableness criterion may very well result in a finding that a legal duty to use the MES to prevent further harm rested on the doctor if regard is had to the prior operation and the professional relationship between doctor and patient.[93]

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88 The *omissio per commissionem* rule: Neethling *et al* 51-55.

89 *Minister van Polisie v Ewels supra* 596-597.

90 The so-called "municipality cases" in which it was found that municipalities could only be held liable for poor construction and repair of roadways (if a new source of danger was created by prior conduct) since there was no general duty on them to maintain roads: *Halliwell v Johannesburg Municipal Council* 1912 AD 659; *De Villiers v Johannesburg Municipal Council* 1926 AD 401; *Cornah v Durban City Council* 1958 2 SA 140 (D). See further Neethling *et al* 52 *et seq*.

91 *Regal v African Superslate (Pty) Ltd* 1963 1 SA 102 (A) 106 109; *Minister of Forestry v Quathlamba (Pty) Ltd* 1973 3 SA 69 (A) 82; *Minister van Polisie v Ewels supra* 597.

92 See ch 3 par 3.3.2.1 *supra*.

93 See par 6 *infra*.

(b) Control of a dangerous object

A person who exercises control over a dangerous object or situation such as a fire,[94] a dangerous animal,[95] etcetera has a legal duty to prevent others from coming to harm by such objects or situations.[96] After a legal duty has been established, damage caused by the failure to control the situation is regarded as *prima facie* wrongful.[97] These situations are sometimes difficult to distinguish from cases where a person already has control of a dangerous object and then fails to exercise proper control as a reasonable person would have done. Such cases do not involve omissions but rather the negligent positive conduct, a *commissio* (the negligent exercise of control). The mere control of property and the failure to exercise control which causes prejudice to another is not *per se* unlawful. In *Administrateur, Transvaal v Van der Merwe*[98] damage was caused by a fire that broke out on the side of a public road and in the absence of a firebreak, spread to a nearby farm. Since the road was under the control and supervision of the Aministrator of Transvaal, the respondent alleged a legal duty was breached through failing to make a firebreak. The court held that that the crucial issue with regard to the control of

94 In *Minister of Forestry v Quathlamba (Pty) Ltd supra* a fire had broken out on the State's property and had been extinguished. The next day another fire broke out and fanned by a gale-force wind, became uncontrollable. After traversing a firebreak it spread to the plaintiff's farm where it caused extensive damage. The Appeal Court confirmed the view that a landowner who becomes aware of a fire on the land under his control has a legal duty to take reasonable steps to control or extinguish the fire even though he did not cause the fire.

95 In *S v Fernandez* 1966 2 SA 259 (A) the court held that a legal duty rests on the owner of a baboon kept in a cage to ensure that the animal is securely enclosed and cannot escape to injure others.

96 *King v Arlington Court (Muizenberg) (Pty) Ltd* 1952 2 SA 23 (C); *Wolff v Foto Helga (Pty) Ltd* 1986 1 SA 816 (O); *Ablort-Morgan v Whyte Bank Farms (Pty) Ltd* 1988 3 SA 531 (E); *Oosthuizen v Homegas (Pty) Ltd* 1992 3 SA 463 (O); *Sv Fernandez supra*. *Cf* Neethling *et al* 56-58.

97 Neethling *et al* 57.

98 1994 4 SA 347.

property is whether the precautionary measures which should have been implemented, can reasonably and practically be expected from the defendant in the circumstances. The court found that taking all the facts into account, *inter alia* the affordability and proportionality between the potential damage and cost of prevention, the objective criterion of reasonableness did not require the taking of precautionary measures such as making firebreaks, the appellant's omission was accordingly not unlawful.[99] An example of ES liability could be found in the situation of a supervisor of a nuclear plant or a similar undertaking, who fails to use an ES Machine that functions as a radioactive material warning system, and consequently injury is caused to the workers in the plant.

(c) A special relationship

The existence of a special relationship between parties may indicate that one party has a duty to prevent harm to the other party.[100] For example a contractual relationship,[101] the relationship between policeman and citizen[102] and between an employer and employee.[103] Neethling *et al*[104] notes however, that it is uncertain whether the relationship alone will give rise to a legal duty.[105] Each case should be judged in the light of the *boni mores* criterion to determine whether a duty exists.

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99 *Supra* 364 F.

100 Neethling *et al* 60; Van der Merwe and Olivier 45-46; Boberg 212; Van der Walt 33.

101 *Cathkin Park Hotel v JD Makesch Architects* 1993 2 SA 98 (W); *Bayer South Africa (Pty) Ltd v Frost* 1991 4 SA 559 (A).

102 *Minister van Polisie v Ewels supra.*

103 *Silva's Fishing Corporation v Maweza* 1957 2 SA 256 (A)

104 At 60.

105 See also Van der Merwe and Olivier 46; Van der Walt 33.

In *Cathkin Park Hotel v JD Makesch Architects*[106] the plaintiffs instituted action for the recovery of damages suffered in consequence of a fire in their hotel, against the defendants who designed and constructed the hotel. The action was based on the *actio legis Aquiliae* and the damages claimed consisted of patrimonial damages arising from physical damage to property. The defendants raised exceptions to the particulars of claims in that the plaintiffs were limited to their contractual rights and had no cause of action based in delict. The court held firstly, that in pursuance of the decision in *Lillicrap, Wassenaar and Partners v Pilkington Brothers (SA) (Pty) Ltd,*[107] the mere fact that a claim might also have been brought and pleaded as a claim for damages *ex contractu*, does not bar a claim for damages in delict. Although the duty of care arose in relation to obligations assumed by the defendants pursuant to a contractual relationship, it merely sets out the field of origin of the duty of care. The facts pleaded must only establish a delictual cause of action.[108] The fundamental question is therefore whether the respondents have alleged sufficient facts to constitute a cause of action for damages in delict, and since the court found that in the case of physical injury to person and property the Aquilian action clearly lay, the exceptions had to be dismissed.[109]

In the context of ES liability, the special relationship which exists between a professional person and her client, namely a contractual relationship for the rendering of professional advice, may not be sufficient to give rise to a duty to use an existing ES. Regard should also be had to other factors such as the type of damage caused. On the other hand, where an ES is used as an aid like the Intelligent Assistant, the use thereof may form part of the general standard and level of skill of the profession,

106 *Supra.*

107 1985 1 SA 475 (A).

108 At 100 E.

109 At 103 G.

and failure to use it could point to professional negligence.[110]

4.3 Application to expert systems

The failure to use an ES will either constitute negligent positive conduct because the wrongdoer fails to exercise reasonable control in an activity or it will constitute an omission in that an ES is not used in a situation where there is a legal duty on the wrongdoer to use the system. The existence of such a duty depends on several factors and all relevant circumstances must be taken into account. In principle a person will not act wrongfully by failing to use an ES to prevent harm to others unless the *boni mores* test determines otherwise. In terms of the *boni mores* test, it may be found that a professional person who, during the rendering of professional services does not make use of an existing Intelligent Assistant or ES Machine and consequently damage is incurred, breaches a legal duty to act.[111]

5. Products liability

5.1 Introduction

In the case of damage caused by the use of a defective ES, the producers of any of the three identified types of ES's may incur delictual liability based on products liability.[112] Products liability refers to the manufacturer's liability for loss caused by a defective product.[113] As such, it does not form a separate ground of delictual liability in our law, but is a form of *damnum iniuria datum*, compensable in terms of

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110 See par 6 *infra*.

111 See par 4.2 (c) *supra*.

112 See ch 3 par 3.3.6.1 *supra*.

113 See in general on products or manufacturer's liability, Van der Walt 1972 *THRHR* 284 *et seq*; De Jager 1987 *THRHR* 347 *et seq*; Boberg 193 *et seq*.; Neethling *et al* 304 *et seq*; Snyman 1980 CILSA 177 *et seq*.

the *lex Aquiliae*, which is based on fault.[114] In the event that non-patrimonial loss is suffered as a result of a product defect, the injured party will have the action for pain and suffering at her disposal.[115] Neethling *et al*[116] remarks that the increasing industrialisation and mechanisation of modern society results in the constant potential of prejudice to the individual which is created by defective consumer products. Van der Walt[117] puts it thus:

> Hierdie gevaar van defekte produkte is sonder sy keuse of medeseggenskap, elke individu se konstante metgesel. In die voor-industriële tydvak was verbruikersgoedere basies beperk tot natuurlike landbouprodukte en die betreklik ongekompliseerde produkte van die tuis- en kleinnywerheid. Die verbruiker kon sonder veel kundigheid die kwaliteitsgeskiktheid beoordeel. In 'n eeu van industrialisasie, outomatisasie en ongekende tegnologiese prestasie is die geweldige verskeidenheid van verbruikersprodukte dikwels oorspronklik verpak of meganies van aard. Die gewone verbruiker het nóg die besondere kennis van nóg die toegang tot en insig in die gekompliseerde produksieproses om die verborge gebreke van sy aangekoopte produk te ontdek.

In the case of software the words of Van der Walt are even more appropriate if the specific nature of software is taken into account as well as the general state of ignorance of the ordinary software user regarding the workings of a computer and the design and production of a software system. In the case of ES software the technological disadvantage of the consumer-user is even more accentuated, due to their complex and composite nature.[118]

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114 In contrast to the development of a strict products liability regime in other countries, especially after the enactment of the EU Directive on liability for defective products: see ch 5 Comparative law study: Summary *supra*.

115 See ch 3 par 3.2 *supra*.

116 At 305.

117 1972 *THRHR* 224-225.

118 See ch 2 par 5 *supra*.

5.2 Requirements

According to our positive law the Aquilian action applies to this type of liability and the remedies applicable are the Aquilian action in the case of patrimonial loss sustained and the action for pain and suffering for certain types of non-patrimonial loss in the case of negligent bodily injury.[119] Since the basis of South African products liabilty law was firmly established in Aquilian liability from the start, it was not necessary for our courts to invent contractual applications and artificial extensions in the development of a substantive products liability law.[120] Another reason is the fact that pure economic loss is in principle actionable in delict.[121]

All the elements of a delict must therefore be present before the manufacturer will be liable. The plaintiff will have to prove that the manufacturer acted wrongfully and culpably which conduct caused damage. Because South African law relating to products liability is still undeveloped much can be learnt from comparative law in this regard.[122] In *A Gibb and Son (Pty) Ltd v Taylor and Mitchell Timber Supply Co (Pty) Ltd, supra*, the first case of its kind before a South African court, Coetzee J (460) commented on the dearth of South African academic writing on the topic "products liability" and accepted the necessity of referring to American and English

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119 *Lennon Ltd v BSA Company* 1914 AD 1; *Cooper and Nephews v Visser* 1920 AD 111; *Bayer South Africa (Pty) Ltd v Viljoen* 1990 (2) SA 647 (A); *A Gibb and Son (Pty) Ltd v Taylor and Mitchell Timber Supply Co (Pty) Ltd* 1975 (2) SA 457 (W); *Combrinck Chiropraktiese Kliniek (Edms) Bpk v Datsun Motor Vehicle Distributors (Pty) Ltd* 1972 (4) SA 185 (T).

120 *Contra* the development of products liability in the foreign countries investigated: see ch 5 parts I and II *supra*.

121 See par 3.1 *supra*.

122 A comparative study of products liability law was undertaken of England: see ch 5 part I par A 2.8 and 3.2 *supra*; USA: see ch 5 part I par B 3.2 *supra*; the EU: see part II par 8 *supra*; Germany: see ch 5 part III par 5 *supra*; and the Netherlands: see ch 5 part III par 3 *supra*.

law in this respect.[123] However, Van der Merwe and De Jager[124] note that the sparsity of cases is not a true reflection of the topicality of part of this part of the law as claims for compensation of damage caused by defective products are more often settled outside the court.[125]

5.2.1 The act

The requirement of an act is satisfied through the conduct of the manufacturer which consists mainly of the control and organisation of the complex process of industrial production.[126] According to De Jager[127] these acts of control and organisation are human and have an essentially individualistic character which can be governed by the mind of the manufacturer and should therefore be explained in terms of the causal theory of the act. The acts may consist of a *commissio* or an *omissio*.[128]

5.2.2 Wrongfulness

5.2.2.1 Breach of a legal duty

Wrongfulness lies either in the infringement of a subjective right or in the breach of a legal duty.[129] In the case of products liability wrongfulness is found in the breach

123 Neethling *et al* 306. See also ch 5 Part 1 *supra*.

124 1980 *SALJ* 83.

125 The reasons are *inter alia* the high cost of litigation and the need of well-known manufacturers to protect their identities: Van der Merwe and De Jager 1980 *SALJ* 83.

126 De Jager 1978 *THRHR* 352; Van der Walt 1972 *THRHR* 239.

127 1978 *THRHR* 352.

128 See ch 3 par 3.3.1 *supra*.

129 See ch 3 par 3.3.2 *supra*.

of a legal duty.[130] The reason why a breach of duty must also be present in the case of a defective product causing personal and property injury (which in itself constitutes an infringement of a subjective right which is *prima facie* unlawful), lies in the indirect consequences of the manufacturer's act.[131] Acts which directly cause harm can be judged solely by their harmful consequences but acts which indirectly cause harm are only unlawful when they also violate a legal duty.[132] A manufacturer (or in the case of software, a producer) has a duty according to the legal convictions of the community to prevent the distribution of defective products on the market which will harm the interests of the consumer.[133] The causing of damage by a defective product is therefore in principle wrongful in that it is a violation of this legal duty. Consequently, the product must be defective in order to constitute wrongful conduct by the manufacturer.[134]

5.2.2.2 Defective product

The question whether a product is defective can only be answered with regard to the legal convictions of society (*boni mores*).[135] Generally, a product that is **unreasonably dangerous** will be considered as defective.[136] A product is unreasonably dangerous if in the circumstances, it does not meet the expectations

130 Neethling *et al* 306; De Jager 627 *et seq* and 1978 *THRHR* 354 *et seq*; Snyman 1980 *CILSA* 188.

131 De Jager 1978 *THRHR* 347.

132 De Jager 1978 *THRHR* 356.

133 The *boni mores* test is applied: see ch 3 par 3.3.2.1 *supra*.

134 Van der Walt 1972 *THRHR* 241.

135 Van der Walt 1972 *THRHR* 241; Neethling *et al* 306; De Jager 359; Van der Merwe and De Jager 1980 *SALJ* 88.

136 De Jager 1978 *THRHR* 360; De Jager 632 *et seq*; Neethling *et al* 306.

of the reasonable consumer with regard to its safety.[137] This definition of a defective product is also used in the Second Restatement of Torts[138] and in the EU Directive on liability for defective products,[139] also referred to as the "consumer expectation" test.[140] Products that are dangerous according to their form and content such as knives or cigarettes, cannot be regarded as defective because a reasonable consumer would be aware of the safety risk in using them.[141] The state of human science and technology and the necessity of experimenting must be taken into account when determining the defectiveness of a product.[142] It is inevitable that that some products will be dangerous at a given time of development, for example new drugs that may have as yet undetermined side effects.[143] In this regard mention must be made of the development risk defence or, as it is also known the state-of-the-art defence which originated in the USA and was adopted in the strict product liability legislation of all but one of the EU member states.[144] In terms of this defence a manufacturer will not be liable for damage caused by a defect in a product if it is proved that the state of scientific and technical knowledge at the time when the product was put into circulation, was not such that the existence of the defect could be discovered.[145] In the case of software the question may be asked whether the consumer does not as a rule expect that there will be faults in the

137 Van der Walt 1972 *THRHR* 242; De Jager 1978 *THRHR* 358.

138 Paragraph 402A: see ch 5 part I par B 3.2.2.2 *supra*.

139 85/374 Art 2: see ch 5 part II par 8.3.4 *supra*.

140 See ch 5 Comparative law: summary *supra*.

141 Neethling *et al* 306.

142 Van der Walt 1972 *THRHR* 242; De Jager 1978 *THRHR* 366.

143 Van der Walt 1972 *THRHR* 242.

144 Only Luxumbourg declined to incorporate this optional defence in terms of the EU Directive: Hoffman and Hill-Arning 9. See also ch 5 part II par 8.3.8 *supra*.

145 *Cf* art 7(e) of the EU Directive, par 1(2) 5 *PHG*, art 185 e *NBW*, and s 4(1)e CPA.

software as it is well-known that completely bug-free software does not exist.[146] Because it is universally accepted that software, including ES's, are not 100% bug-free, the degree of safety which can be expected is a policy issue.[147] The typical case group of defects developed in other product liability regimes are also distinguished in South African law,[148] namely manufacturing or production defects, design defects, instruction defects and the latest group, development risk defects (also called observation faults).[149]

The following duties of conduct in accordance with the criterion of reasonableness, are distinguished in determining the unlawfulness of the manufacturer's act:

A general duty to take reasonable steps to ensure that defective products do not reach the market or, if they do, to withdraw them from the market, or to take steps to ensure that no harm arises from the presence of the product on the market;[150] a duty to take into account the most recent knowledge available at the stage of planning and design; a duty to inspect and to control the product when manufactured; a duty to provide potential users with directions for use; a duty to warn users against inherent dangers in the product; a duty to withdraw the product from the market once a defect was detected after release. In determining the above duties factors such as the type of product,[151] the nature of the manufacturer's business enterprise, the

146 See ch 2 par 9.2.2 *supra*.

147 This approach is followed by Anglo-American as well as European computer law commentators: Triaille 1993 *CLSR* 221; Stuurman 141; Tapper 257; Reed(2) 68.

148 De Jager 1978 *THRHR* 364.

149 De Jager 1978 *THRHR* 364-366. For a definition and discussion of the various defects, see ch 5 part III par 5.5.4 *supra* since they have the same meaning and content in SA law.

150 Van der Merwe and De Jager 1980 *SALJ* 88; De Jager 1978 *THRHR* 359; Van der Walt 1972 *THRHR* 228.

151 The producers of ES's in safety-related applications for example, will be subject to stricter measures than the producers of ES's in computer games applications.

customs and practices followed in a particular trade or industry,[152] the knowledge and expertise of potential purchasers and users of the product,[153] the cost of safety measures, and the fact that consumers are required to run a certain degree of risk in exchange for a product for which the need supersedes its hazardous qualities,[154] are taken into account. As more and more duties are concretised according to the reasonableness criterion, manufacturers will become increasingly certain about the steps they should take to act lawfully.[155] In the final analysis the general duties will have to be concretised for each type of case, including cases where ES's are used.

With regard to software products it can already be stated that a paramount duty of a developer of software would be the adherence to universally-acknowledged software standards and quality assurance production systems such as the ISO 9000 series.[156] If a software developer has followed existing standards and applied quality assurance procedures, and a defect nevertheless occurs, it may be argued that the product is not defective as it was designed and produced in accordance with the current state of scientific knowledge, and it probably complies with the consumer expectation test. Software producers and users should take note as a general

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152 Eg the existence of specific product safety standards and the application of quality assurance systems during the production process such as the ISO 9000 standards: see par 5.2.3.2 *infra*.

153 For example, in the case of an Intelligent Assistant it may be assumed that the instructions and warnings accompanying the ES will be read and followed by a professional user, whereas in the case of a Self-Help System the instructions will have to be clear and simple enough to be understood by a lay-user.

154 For example a vaccine against a life-threatening disease which may itself cause serious harm.

155 Many duties are already specified in legislation, for example the Medicines and Related Substances Act 101 of 1965 which provides for the protection of consumers injured by defective pharmaceutical products; and the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act 36 of 1947 which protects consumers against *inter alia* herbicides.

156 This duty is evident from the comparative law investigation in regard to software liability: see Comparative law conclusion part III *supra*.

principle to adhere to quality assurance standards wherever possible.[157]

5.2.3 Negligence

5.2.3.1 Test for negligence

Once it has been established that the manufacturer acted wrongfully, it must be determined whether she acted negligently.[158] The manufacturer's conduct must be tested against the care that the reasonable person would have exercised in the particular circumstances. In terms of the test for negligence it must be asked whether the damage was reasonably foreseeable and preventable.[159] In the decision of *A Gibb and Son (Pty) Ltd v Taylor and Mitchell Timber Supply Co (Pty) Ltd*[160], the court held that a dealer (supplier) may, in some circumstances, be delictually liable for defects in a product which caused damage. The facts of the case was that the plaintiff, who was a building contractor, acquired a defective scaffold plank from the defendant, the dealer, on account of which an employee of the plaintiff sustained some injuries. After the plaintiff had compensated the employee he claimed a contribution ex delict from the defendant on the grounds that the defendant was 90% contributorily negligent to his damage. The court held that the liability of the dealer depended on the question whether there was a duty to take reasonable care in detecting defects. Such a duty to inspect does not arise where a reasonable dealer in the position of the defendant, expects a search for defects by the client which will probably bring a defect to light. *In casu* the court found there was no duty to inspect because a reasonable timber merchant would have expected a building contractor to

157 For a discussion of quality assurance, see par 5.2.3.2 *infra*.

158 De Jager 640 *et seq*.

159 Boberg 194; De Jager 595-596; *A Gibb and Son (Pty) Ltd v Taylor and Mitchell Timber Supply Co (Pty) Ltd supra* 464-465.

160 *Supra*.

inspect scaffoldinging for possible defects before using it. Damage was therefore not foreseeable and negligence absent.

In analogy to the duty to inspect of the builder above, it can be said that the user of software has a duty to inspect the software before applying it.[161]

5.2.3.2 Quality assurance

Negligence can also relate to the lack of control measures and a failure to adhere to product standards which is related to quality assurance in the case of software.[162] In other words, a producer of software may be found negligent if the necessary control measures were not put into effect. At the same time, these measures may serve as a determinant of the standard of skill applicable during the production of software as was suggested in other jurisdictions.[163] This would first of all entail conformance to relevant standards and codes of practice where they exist.[164] Thereafter a risk analysis of the application area should be undertaken[165] in order to select techniques for specification, design, development and implementation that

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161 See also the inspection duty of a medical professional referred to in ch 5 part I par 2.2.2.2 *supra*.

162 See the discussion of the ISO 9000 standards series: par 5.2.2.2 *infra*.

163 See ch 5 part I and II *supra*.

164 Bott *et al* 237. In *Bevan Investments v Blackhall and Struthers* [1973] 2 NZLR 45 the court stated:

> A design which departs from substantially from relevant engineering codes is prima facie a faulty design unless it can be demonstrated that it conforms to accepted engineering practice by rational analysis.

165 See appendix III for an example of a risk analysis demonstrating the evaluation of application areas and possible defaults.

will achieve the appropriate level of integrity in the finished product.[166] During system design and -construction, continuous testing and debugging procedures should be adopted to increase the reliability of the system.[167] In the final analysis an external **quality assurance and control of software through a certification process** such as the **ISO 9000 quality assurance control system** should be implemented before abandoning control:

> Users have always been concerned about the quality of software. The term software quality is considered to be an oxymoron - it has even earned its own variation of Murphy's law:
>
> If builders made buildings the way programmers create software, the first woodpecker would destroy civilization.[168]

Since the beginning of the nineties there has been a world-wide trend of software developers conforming to international quality standards such as those embodied in the ISO 9000 series of standards.[169] The international standard ISO 9001 for software is the leading external quality standard for software. It provides broad guidance on how to implement, maintain and improve a quality system capable of ensuring high-quality software. The standard is important because it is becoming the only way in which users can judge the competence of a software developer. It has been adopted by more than 130 countries. Each country has its own institution of the ISO 9000 series of standards as well as its own process of attaining such accreditation. In South Africa the process is regulated by the South African Bureau

166 See Bott *et al* 238-256 for an overview of appropriate software engineering procedures.

167 The consequences of not testing was also pointed out by an American court in *Helling v Carey* 83 Wash.2d 514, 519 P.2d 981 (1974): see also ch 5 Part I par *supra*.

168 Quinnell 75.

169 Ince 1.

of Standards (SABS) and the standard is known as SABS ISO 9001.[170]

Quality assurance means assuring that a product or service does what a customer expects it to do. "Fitness for purpose" is a central concept of quality assurance and implies that there is a description of the purpose an artefact is intended to perform. With regard to software systems the requirements are contained in a document referred to as the **system specification**.[171] According to Ince,[172] the modern and sophisticated view of quality assurance is to associate it with various quality factors. Some of the more important quality factors are:

- correctness - the software system must actually conform to its system specification
- maintainability - the ease with which the system can be changed
- portability - the effort required to transfer a system from one hardware platform to another
- testability - the ease with which a system, or part thereof, can be tested
- usability - the effort required to learn, operate and interrupt a functioning system.[173]

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170 The SABS has drafted a series of three codes of practice dealing with quality systems to be used for external quality assurance purposes when conformance to specified requirements is to be assured by the supplier. SABS 1.

171 Ince 2.

172 2.

173 Usability often poses a serious problem in systems because developers tend to think only about the front-end of a project, consequently an inadequate interface is hastily bolted on at the end of the development. The result is that although the system satisfies all the functions in its system specification, it is grossly unusable due to a very poor interface: see Ince 4.

- reliability - the ability of the system to keep on executing with little interruption to its functioning.[174]

- efficiency - the degree to which computing resources are used in an application.

- integrity - the extent to which the system and its data are immune to access by unauthorized users

- reusability - the ease with which chunks of software in one system can be moved to another system.

- interoperability - the ability of a system to operate in conjunction with another software system.

The way in which it is ensured that these quality factors will be present in the completed software system is through the adoption of a quality system. The quality system is embodied in the quality manual. Not all the abovementioned quality factors need to be present in every system as the type of system determines which factors will be used, strengthened or omitted. In the case of a safety-critical system such as a fly-by-wire ES, there has to be exceptionally high correctness and reliability quality factors.

5.2.3.3 *Res ipsa loquitur*

It is generally accepted to be very difficult to prove fault on the part of the manufacturer because of the absence of fault in the production process or because the injured party cannot obtain proof of fault because of the fact that the technological

174 In safety-critical systems with a material output such as the ES Machine, this quality factor is expected to be totally present.

production process is complicated.[175] In the case of ES's both these difficulties are manifest.[176] Neethling *et al*[177] states that this hardship of the prejudiced party should be alleviated in the same way as in Anglo-American law,[178] which is through the application of the doctrine of *res ipsa loquitur*.[179] They suggest that the *res ipsa loquitur* inference of negligence should at least be applied in cases where a consumer proves that she was prejudiced by a defective product which was in that defective state when the manufacturer abandoned control over it.[180] In such cases the *res ipsa loquitur* doctrine should be used to expedite proof of negligence of the manufacturer.

Our courts are not opposed to applying the doctrine where policy considerations justify it.[181] In the case of software the application of this doctrine is very appropriate since the production of software consists of a complicated procedure and, especially in the case of ES software, involves many parties. However, the doctrine has a very limited meaning in our law.[182] It is not a presumption based on a rule of law, but merely an inference of negligence to be used when the facts justify it.[183]

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175 Neethling *et al* 307; Van der Walt 1972 *THRHR* 242-243.

176 See ch 2 par 9.1 *supra*.

177 At 307.

178 See ch 5 part I par A 2.3 *supra*.

179 See ch 3 par 3.3.3.5 *supra*.

180 See also De Jager 1978 *THRHR* 364; Neethling and Potgieter 1990 *De Jure* 375-376.

181 *Combrinck Chiropratiese Kliniek (Edms) Bpk v Datsun Motor Vehicle Distributors (Pty) Ltd* 1972 4 SA 185 (T); *Bayer South Africa (Pty) Ltd v Viljoen* 1990 2 SA 647 (A) 661-662.

182 See ch 3 par 3.3.3.5 *supra*.

183 See Schwikkard *et al* 382; Hoffman and Zeffert 552; Scmidt 165.

In *Groenewald v Conradie*[184] Rumpff J states the principle as follows:

> Ten slotte is dit wenslik om te beklemtoon dat die gebruik van die uitdrukking *res ipsa loquitur*, streng gesproke alleen dan van pas is wanneer dit nodig is om enkel en alleen na die betrokke getuienis te kyk sonder die hulp van enige ander verduidelikende getuienis. Alleen as die gebeurtenis op sigself en in sy eie lig beskou word, behoort die uitdrukking gebesig te word omdat anders die beperkte betekenis daarvan vertroebel mag word.

An inference of fact is actually a mode of thought which is employed in the absence of direct evidence. As such, the inference cannot affect the incidence of the burden of proof, but may give rise to an evidential burden.[185] In *Sardi v Standard and General Insurance Co Ltd*[186] the court remarked:

> The maxim has no bearing on the incidence of the onus of proof on the pleadings. It is invoked where the known facts, relating to negligence, consist of the occurrence itself (*Groenewald v Conradie* 1965 (1) SA 184 (A) at 187F). The occurrence may be of such a nature as to warrant an inference of negligence. As Innes CJ pertinently insisted in *Van Wyk v Lewis* 1924 AD 438 at 445. 'It is really a question of inference.'

Also in *Bayer South Africa (Pty) Ltd v Viljoen*[187] the Appellate Division restricted the doctrine to the application of instances where the circumstances of the case give rise to an inference of negligence, thereby not really alleviating the plaintiff's burden.[188] The defendant does not have to prove to she was not negligent, she only has to show that the facts are equally consistent with a finding not involving negligence, or she may adduce sufficient evidence of proper care to create an element of doubt

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184 1965 1 SA 184 (A).

185 See ch 3 par 3.3.3.5 *supra*. See also Schwikkard *et al* 382; Hoffman and Zeffert 552; Schmidt 165.

186 *Supra* 780D.

187 1990 2 SA 647 (A) 661-662.

188 Neethling *et al* 308.

sufficient to destroy a balance of probability.[189] The lack of defects or errors cannot be ensured during complicated manufacturing processes and it is inevitable that some defective products will reach the market. Even if it can be inferred from the fact that a defective product had reached the market that the manufacturer did not act in accordance with her duty of care, she will be able to prove her innocence in most cases through giving a reasonable explanation that excludes an inference of negligence.[190] In the case of an ES developer it will even be easier to give a reasonable explanation in the light of the many parties involved in the production of an ES.

5.2.4 Damage

Damage may consist of patrimonial and non-patrimonial loss. Where the latter form of loss is incurred, the injured party will be able to claim damages with the action of pain and suffering. Patrimonial loss, including pure economic loss can be claimed with the Aquilian action.

5.3 Strict liability

Van der Walt,[191] with whom Neethling *et al* agrees,[192] states that products liability should, ultimately, be based on liability without fault:[193]

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189 *Arthur v Bezuidenhout and Mieny supra*; Hoffman and Zeffert 554.

190 The *res ipsa loquitur* - doctrine does not reverse the onus of proof: *Arthur v Bezuidenhout & Mieny* 1962 2 SA 566 573. The defendant need not prove that she was not negligent, she need only show enough evidence of proper care to raise a doubt. Cf De Jager 645.

191 1972 *THRHR* 243; see also De Jager 1978 *THRHR* 365-366.

192 308.

193 Neethling *et al* 308.

> Die aanvaarding van 'n skuldlose aanspreeklikheid in geval van produkte-aanspreeklikheid kan deur verskeie ander faktore geregverdig word: die openbare belang in die fisies-psigies welsyn van die mens vereis dat die hoogste mate van beskerming teen defektiewe verbruikersgoed; die vervaardiger skep deur sy bemarking en advertensie die vertroue by die publiek dat sy produk veilig is; die strenge aanspreeklikheid dien as aansporing om die uiterste mate van sorg aan die dag te lê; die vervaardiger is; vanuit ekonomiese oogpunt gesien, die beste in staat om die skadelas te versprei deur prysverhoging en versekering.

De Jager[194] proposed in 1978 already that at least manufacturing (production) defects should incur strict liability. Manufacturing defects result from defects that developed in the actual manufacturing process or in the control mechanism applied by the manufacturer after production to remove defective products before distribution on the market. These types of defects occur in spite of stringent control measures and the manufacturer will in many cases be able to prove that she was not negligent. There are also cogent policy reasons for the strict liability of the manufacturer in these cases. The manufacturer can regard such a defect as part of the production risk which is contained in the production cost and is insurable.[195]

It is my contention that delictual liability in the case of personal and property injury caused by the use of a defective ES should be on a strict or no-fault basis. The imposition of strict liability can be achieved either by way of legislation or through the extension of existing common law principles. The imposition of strict liability principles in this instance is in conformance with the world-wide trend towards consumer protection applicable to products in general.[196]

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194 At 648; see also De Jager 1978 *THRHR* 365.

195 De Jager 1978 *THRHR* 366.

196 See the arguments advanced in regard to the access-to-justice movement in ch 4 par 3.2.1 *supra*.

5.4 Defences

The most important defences against a products liability claim are voluntary assumption of risk, contributory negligence and abnormal use of the product.

5.4.1 Voluntary assumption of risk

The injured party who uses the product while knowing of the defect, consents to the risk of injury and cannot claim for damage incurred.[197] Consent to risk of injury is a ground of justification which excludes the unlawfulness of the act.[198] The user of an ES such as the Self-Help System, who is aware of the danger in relying on the system's advice, may therefore not be able to rely on a products liability claim.

5.4.2 Contributory negligence

The contributory negligence of the plaintiff is not an absolute defence; if proven it only results in the apportionment of the damage suffered by each party in accordance with their relative degrees of fault.[199] A consumer who negligently fails to follow instructions for use of the product or ignore warnings, may be contributory negligent. In the case of software the instructions and warnings for use may be contained in the program itself.

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197 De Jager 1978 *THRHR* 372.

198 See par 3.3.2.4 *supra*.

199 S 1(1)(a) of the Apportionment of Damages Act 34 of 1956: see ch 3 par 3.3.3.6 *supra*.

5.4.3 Abnormal use

The abnormal use of a product is a factor that may contribute to a finding that the producer did not act wrongfully or negligently.[200] Abnormal use of an ES would therefore be a factor in the determination of wrongfulness according to the reasonableness criterium (the *boni mores*).[201] If the consumer uses the product in a manner for which the product was not intended, it is unlikely that the manufacturer will be found negligent since the abnormal use of a product will not be reasonably foreseeable.[202]

5.5 Application to expert systems

The following statement by Van der Merwe and De Jager[203] is very relevant concerning the question whether strict liability should be introduced into South African product liability:

> The final decision is a matter of legal policy, depending on the degree of protection that is considered desirable for the consumer or a category of consumers on the one hand, or a specific trade or industry on the other hand.

In my opinion a high risk of potential injury exists for the category of consumers consisting of the users of ES's of the type embodied by the Self-Help Machine as there is currently no peremptory standards or control mechanisms protecting users from defective software.[204] The traditional delictual remedies based on fault puts the plaintiff in the difficult position of having to prove negligence on the part of the

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200 De Jager 1978 *THRHR* 373.

201 See ch 3 par 3.3.2.1 *supra*.

202 Neethling *et al* 307; De Jager 659.

203 1980 *SALJ* 83.

204 The ISO 9000 series may be implemented to render quality assurance.

software producer - an almost impossible task in the highly sophisticated domain of artificial intelligence. In analogy to the protection given to consumers of defective products in other countries,[205] the South African legislator should enact strict liability legislation for defective software causing direct personal- and property injury.

6. Professional liability

6.1 Introduction

Professional liability refers to the liability of a member of a profession for professional conduct.[206] In the context of ES liability, the injured party may have a delictual claim based on professional liability against the professional user of the ES where the damage is caused during the exercising of professional services. The user may also have a claim based on professional liability against the developers of an ES in the light of the specific nature of an ES, namely the provision and embodiment of expert or professional knowledge to the user via the ES.[207] In this regard a "computer malpractice" action has already been suggested by Anglo-American computer law writers.[208]

6.2 The nature of professional liability

According to Pretorius[209] the following characteristics denote a profession:

(a) The nature of a professional's work is skilled and specialised, a substantial

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205 See ch 5 part I pars A 3.2 and B 3.2 *supra*, part II par 8 *supra* and part III pars A 3 and B 3 *supra*.

206 See ch 3 par 2.7 *supra*.

207 See ch 2 par 10.1 *supra*.

208 See ch 5 part I par B 2.2.2.3 *supra*.

209 14-16. See also Jackson and Powell 1-4.

part thereof is mental rather than manual and a period of theoretical and practical training is required before work of a certain standard can be performed.

(b) Members of a profession adhere to a moral code beyond the general duty of honesty and are expected to provide a high standard of service for its own sake.

(c) Members of the profession usually belong to a controlling body which regulates admissions and uphold standards by issuing codes of professional conduct.

(d) Most professions have a high status in the community which is conferred either by way of legislation[210] or common consent of the community.[211]

Although some of the traditional characteristics have blurred with the increase of occupations achieving professional status, they are still a characteristic of most of the new professions.[212]

For an occupation to become a profession, the community expects that

> ..its practitioners enjoy the privileges of controlling their own entry and regulating their own conduct. It means that they must have specialised skills acquired by intellectual and practical training, that they have a high degee of detachment and integrity, and, above all, that they have a strong sense of responsibility and an exceptional committment to the interests of their clients which transcends all other committments.[213]

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210 See for example the *Medical, Dental and Supplementary Health Service Professions Act* 56 of 1974.

211 For example the clergy.

212 Jackson and Powell 16.

213 Quotation from *The Times* of 5 January 1980 cited by Jackson and Powell 2 fn 7.

The question arises whether the computer programming and software engineering field may qualify as a profession in terms of the above requirements. The computer programming field is not instituted by legislation, neither are the practitioners thereof subjected to a controlling body and unfortunately it doesn't seem as if they are held in a higher regard by the community. Assuredly their work is highly skilled and consists only of mental work. However, although a period of compulsory practical training is not formally required, in practice this is usually the case, depending on the software-employer.

With regard to the question whether the producers, specifically the developers of an ES, may be held to a professional standard depends on whether it can be said that computer programming and software engineering in general forms part of a profession in which its members may be subjected to malpractice suits. The situation in South Africa was explained to me in a telephonic conversation with Mr Simon Reynolds, president of the Computer Society of South Africa at the time, who said that there had been an active movement to attain professional status for the information industry in South Africa, but that this was met with considerable opposition from government bodies. The reason for this is apparently a lack of consensus among parties as to whether the industry complies with all the requirements of a profession. According to Mr Reynolds, even the defining of "information technology" is seen to be problematic.[214] Mr Reynolds, who is also a member of the British Computer Society (BCS), is unsure whether South Africa should follow the British example in classifying "software engineers" with the engineering profession because of the great diversity that already exists among the different types of engineers, for example between a mechanical and a civil engineer. Another reason for not joining the engineering profession is the fact that, although

214 Opponents to the idea of software professionals argue that information technology, of which software engineering forms a part, can never be a profession in own right because of its "vehicle-like" nature with regard to other vocations. By this is meant the fact that the information industry's whole existence and primary function lies in the support and enhancement of other vocations or professions such as the medical profession, architects, lawyers, etc.

engineers used to develop many of their own computer systems, there are now system developers that provide a much more specialised service. According to him "Information Technology" should stand alone and be recognised as a profession in its own right. Another significant factor in the debate regarding the quest for professionalism, is the vocational entry examinations organised by the Information Technology Users Council (ITUC). ITUC is a voluntary organisation consisting of more or less 150 major information technology companies in South Africa, with whom prospective employees can take a vocational examination which subsequently certifies that the holder possesses of certain competencies and skills. Although this certificate is not a requirement for employment in the information industry, it is seen as a definite advantage. In my view this points to the need for a more formal regulation and setting of standards which should be recognised by the legislature, thereby rendering formal professional status to the software engineering field. The actions of ITUC point to a need for regulation which is recognised by the industry itself and which it is attempting to attain through self-regulation.

Although it cannot be stated that the field relating to computer programming is regarded as a fully-fledged profession in South Africa yet, it is only a question of time before a more formal adherence to set standards is enforced. The astounding expansion of computer applications into more and more domains and households is urging the necessity for standardisation throughout the community. This need has also been identified by the EU which is striving for the recognition and enforcement of international standards. Software producers and users should take note as a general principle to adhere to quality assurance standards wherever possible. This would first of all entail conformance to relevant standards and codes of practice where they exist.[215] Thereafter a risk analysis of the application area should be

215 Bott *et al* 237. In *Bevan Investments v Blackhall and Struthers* [1973] 2 NZLR 45 the court stated:

taken[216] in order to select techniques for specification, design, development and implementation that will achieve the appropriate level of integrity in the finished product.[217] During system design and -construction, continuous testing and debugging procedures should be adopted to increase the reliability of the system.[218] In the final analysis an external **quality assurance and control of software through a certification process** such as the **ISO 9000 quality assurance control system** should be implemented.[219] The steps set out are a suggestion of the content of minimum guidelines to be followed in the profession of software engineering. A failure to follow one or more of them, may constitute negligence. Such guidelines could form the basis of setting minimum standards that could develop into a professional standard for the construction of software application systems independent of the subject domain.

6.3 Determination of negligence of professionals

The main effect of a professional liability claim is that in the determination of negligence, a higher standard of care than that of an ordinary reasonable person is

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> A design which departs from substantially from relevant engineering codes is prima facie a faulty design unless it can be demonstrated that it conforms to accepted engineering practice by rational analysis.

216 See appendix III for an example of a risk analysis demonstrating the evaluation of application areas and possible defaults.

217 See Bott *et al* 238-256 for an overview of appropriate software engineering procedures.

218 The consequences of not testing was also pointed out by an American court in *Helling v Carey* (1974) 83 Wash 2d 514; 519 P 2d 981: see also ch 5 Part I par 2.2.2.2 *supra*.

219 See par 5.2.3.2 *supra*.

required from a professional in the practising of a profession.[220] The standard of skill and competence may be set by current standards and codes of conduct in the relevant profession.[221] A failure to comply with the relevant standard of skill and competence of the reasonable expert in the same circumstances may result in negligent behaviour.

6.4 Professional liability towards clients

It is trite law that the relationship between a professional and her client constitutes a duty of care on the part of the professional towards the client, which duty exists separately from the contractual relationship existing between them.[222] Adherence to the requirements of a delict is of course a prerequisite for such delictual liability[223] and if it is complied with, the plaintiff in this situation will have an action based on contract as well as on delict to claim compensation for damage incurred. The resultant concurrence of actions does not inhibit a plaintiff suffering personal or property damage, but in the case of pure economic loss, our courts are not willing to acknowledge the concurrence of a delictual action in cases where a contract exists between the parties.[224]

6.5 Professional liability towards third parties

Another implication of professional liability is the delictual liability of members of a profession for loss caused in their professional capacity to third parties. In general it

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220 See generally Jackson and Powell 15-18; Neethling *et al* 129-130; Pretorius 400-403; Midgley(1) 146-148; Midgley(2) 120-132.

221 See ch 3 par 3.3.3.3 *supra*.

222 *Lillicrap, Wassenaar and Partners v Pilkington Brothers (Pty) Ltd* 1985 1 SA 475 (A) 499-500.

223 *Ibid*.

224 *Ibid*; see also ch 4 par 2 *supra*.

can be said that a member of a profession would not be delictually liable towards co-contractants for pure economic loss but will be delictually liable towards third parties for such loss caused unlawfully and culpably.[225] The general principles of delict must be applied to determine the liability of the professional in each case.[226]

6.6 Application to expert systems

6.6.1 Professional liability of the producers

The application of professional liability principles with regard to liability incurred by the DE who is a professional or expert in the field of knowledge of the ES, usually occasions no difficulty. It is expected of an expert who professes to do just that, namely to exercise the care of a reasonable expert in the same position. If the defect of the system is due to a flaw in the knowledge base because of the negligence of the DE, the malpractice suit should be evaluated according to the profession of the DE.[227] In other words, a fault in the knowledge base of a medical ES supplied by a medical expert, will be judged in terms of a medical profession standard. A problem may arise if the domain in which the injury arises, is in itself not subject to professional liability, and the ES is elevated to a higher standard of care than is expected from the human counterpart in the same domain.[228]

6.6.2 Professional liability of the users

The professional liability of the users will only arise in the context of the **Intelligent Assistant** and the **ES Machine**. Where an ES is incorrectly used by a professional

225 Neethling *et al* 284.

226 *Ibid.*

227 Cole 1990 *CLJ* 210.

228 *Ibid.*

user, the user will be liable for damage caused wrongfully and negligently. As there are no special rules pertaining to this situation and the usual delictual requirements qualified by the professional expertise of the user applies, no further discussion is offered. In the case of the use of a defective ES, the situation is comparable to that of a professional using a defective tool in the practising of her profession. Professional liability for the failure to use an existing ES in circumstances where the use thereof would have prevented harm, must be considered in the light of the principles relating to a wrongful and culpable omission on the part of the user. The use of a defective ES by a professional user can be equated to the use of defective instruments or equipment by a medical practitioner. Apart from a claim against the manufacturer of defective equipment, an injured party may also have a claim against the practitioner based on the latter's negligence.[229] The doctor's liability will depend on whether she was aware or ought reasonably to have been aware of the defect in the apparatus.[230] In *Dale v Hamilton*[231] the doctor's failure to inspect and ensure the safe functioning of an X-ray apparatus which caused severe burns to the patient, was found to be negligent since there had been a duty on him to see that the apparatus was safe. In another decision[232] the Appellate Division refused to hold a doctor liable for injuries caused to a patient by the breaking of the needle of a syringe which showed no visible signs of a latent defect. The professional user therefore has a duty to inspect and test an ES before using or relying on it in the practising of her profession. If such a test does not reveal a defect and the user could not reasonably have been aware of the defect, the user cannot be held liable for any resultant loss. The non-use of an ES may amount to an *omissio*, which is a failure to act positively to prevent loss.[233] In general a person is not liable on the grounds

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229 Claassen and Verschoor 52-54; Strauss 264-266.

230 Strauss 265.

231 1924 WLD 184.

232 *Mitchell v Dixon* 1914 AD 519.

233 See Neethling et al 50 et seq; Midgley(1) 48; Boberg 210.

of an omission that causes harm to another.[234] For liability to occur the *omissio* has to be wrongful which will be the case if there is a legal duty on the defendant to act positively in the circumstances. The question whether such a duty exists, must be determined according to the legal convictions of the community.[235] Neethling *et al*[236] points out that certain factors which may indicate the existence of a legal duty to act positively, have crystallised over the years. One such relevant factor is the existence of a special relationship between the parties.[237] This relationship may consist of a contractual relationship such as the one in existence between the user and her client. A legal duty does not necessarily arise merely from the existence of a special relationship and each case will have to be determined in the light of the *boni mores* criterion. It is doubtful whether, at this stage of the development of ES technology the non-use of an ES would amount to a wrongful *omissio*.

7. Vicarious liability

Persons are usually only responsible for their own actions, but there are circumstances in which the law imposes liability on a person who did not have any **personal** involvement in the causing of damage, such as an employer with regard to delicts committed by her employees. Vicarious liability is the only common law form of liability without fault that is applicable in the context of ES liability.[238] Vicarious liability exists where a person is liable without personal fault for a delict committed by

234 There is no general duty on a person to prevent harm being caused to another: *Minister van Polisie v Ewels* 1975 3 SA 590 (A); *Nkumbi v Minister of Law and Order* 1991 3 SA 29 (E) 35.

235 *Minister van Polisie v Ewels supra*; *Kadir v Minister of Law and Order* 1992 3 SA 737 (C).

236 51 *et seq.*

237 Neethling *et al* 60; *Cathkin Park Hotel v JD Makesch Architects* 1993 2 SA 98 (W) 100; *Greenfield Engineering Works (Pty) Ktd v NKR Construction (Pty) Ltd* 1978 4 SA 901 (N).

238 See ch 3 par 3.4 *supra*.

another person.[239] The imposition of this form of liability is based on policy reasons[240] and factors playing a role in the imposition of liability include: control over another's activity, the creation of risk, who benefits from the activity, and who can afford to pay for damages incurred.[241] It applies in cases where there is a particular relationship between persons namely that of an employer-employee, principal-agent and motor car owner-motor car driver.[242] The rationale for the employer's liability is found in the **risk or danger theory** in terms whereof the employer is held liable on the grounds of fairness and justice, for the work of the employee which creates risk of harm (commission of delicts).[243]

The requirements for an employer's vicarious liability for the delict of an employer are the following:[244]

(a) An employer-employee relationship must exist at the time the delict is committed.

There must be a connection between the activity of the employee and the employer's business.[245] This connection is sometimes established by the "creation of risk" principle which is an enquiry into the risk of harm associated with the employment of

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239 Midgley(1) 23.

240 Hosten *et al* 847.

241 *Boucher v Du Toit* 1978 3 SA 965 (O) 971; *Du Plessis v Faul* 1985 2 SA 85 (NC).

242 Neethling *et al* 352.

243 Neethling *et al* 352 *et seq*; Van der Merwe and Olivier 508 *et seq*.

244 Neethling *et al* 353-358.

245 *Mkize v Martins* 1914 AD 382 390; *Estate van der Byl v Swanepoel* 1927 AD 141 152; *Gibbins v Williams, Wright en Mostert Ingelyf* 1987 2 SA 82(T) 90; *Minister of Law and Order v Ngobo* 1992 4 SA 822 (A) 830; *Macala v Maokeng Town Council* 1993 1 SA 434 (A) 441;

the person.[246] The question whether a person is an employee or an independent contractor is determined by the presence or absence of control over them, as well as the circumstances of each specific case.[247] In the case of employment, a contract of service[248] exists in terms of which the employer exercises control or authority over the employee. In the case of an independent contractor a contract of mandate[249] exists which stipulates that services will be rendered without being subject to the control of another.[250] Several factors are taken into account to determine whether a person is a servant or an independent contractor. One of them is the "right to control" test in terms whereof the power or capacity to control, rather than factual control, is the decisive factor.[251]

The vicarious liability of hospitals may be referred to here as, similar to a software house making use of independent professionals to produce a software program, the situation arises where professional staff are contracted to render services to patients in the hospital. In *Mtetwa v Minister of Health*[252] the court overruled previous South African decisions[253] which, in pursuance of antiquated English doctrine, held that

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246 *Macala v Maokeng Town Council supra* 441.

247 See also ch 3 pars 2.6.1.3 and 2.6.2.2 *supra* with regard to contractual liability.

248 *Locatio conductio operarum.*

249 *Locatio conductio operis.*

250 *Smit v Workmen's Compensation Commissioner* 1979 1 SA 51 (A); Van der Merwe and Olivier 510.

251 Neethling *et al* 353-355; Van der Merwe and Olivier 513-514. See also *Rodrigues v Alves* 1978 4 SA 834 (A) 842; *Gibbins v Williams, Muller, Wright en Mostert Ingelyf* 1987 2 SA 82 (T) 90. Van der Walt 1976 *THRHR* 399 points to the development of this right to control test in England, the "organisation test", and states it implies that a person whose work forms an integral part of another's business organisation is regarded as a servant for whose wrongful act the employer is liable: see ch 5 part I par A 3.1 *infra*.

252 1989 3 SA 600 (D).

253 See *Lower Umfolozi District War Memorial Hospital v Lowe* 1937 NPD 31; *St Augustine's Hospital (Pty) Ltd v Le Breton* 1975 2 SA 530 (D).

a hospital authority is not liable for the negligent conduct of its professional staff during the execution of their professional duties.[254] In casu, the court stated that the defendant could be held liable as an employer for the delicts of staff irrespective of the professional or administrative nature of their duties.[255] The court in *Mtetwa*[256] pointed out that the control test as applied in previous cases has undergone a change in modern times which is to be determined as a question of fact:[257]

> The degree of supervision and control which is exercised by the person in authority over him is no longer regarded as the sole criterion to determine whether someone is a servant or something else. The deciding factor is the intention of the parties to the contract, which is to be gathered from a variety of facts and factors.

(b) The employee must commit a delict.

The employer and employee are therefore joint wrongdoers against the injured party and the employer has a right of recourse against the employee.[258]

(c) The employee must act within the scope of her employment when the delict is committed.

The employee acts within the scope of employment if the conduct falls within the terms of the employment contract, and outside such scope when the employee is

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254 *Cf* Strauss 300-302; Claassen and Verschoor 98-103.

255 *Supra* 606C.

256 *Supra*.

257 *Mtetwa v Minister of Health supra* 605F.

258 *Botes v Van Deventer* 1966 3 SA 182 (A) 205; *Harnischfeger Corporation v Appleton* 1993 4 SA 479 (W) 487. See also Van der Merwe and Olivier 508-519.

disconnected from employment and only promotes her own interests.[259]

The employer-employee relationship is relevant to the ES liability issue under discussion in this study.[260] In cases of damage incurred through the use of defective ES's, the software developer may be held vicariously liable for the programming errors of the KE for example, which caused the malfunctioning of the ES, resulting in damage. The KE in such a scenario stays delictually liable and can be cited together with the producer as a joint wrongdoer.[261] The question whether any one of the producers is a servant or an independent contractor of the developer will have to be determined according to the "control test" discussed in (a).[262]

8. Strict statutory liability

The following enactments of strict liability exist in various South African statutes:

(a) Legal Succession to the SA Transport Services Act 9 of 1989

In terms of this act the company that succeeded the SA Transport Services is held liable without fault for any fire-damage caused by a train.[263] This liability could be attributable to ES use if, for example, an ES is used in the train's operation and due to a fault in the ES, fire-damage is caused.

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259 Neethling *et al* 355; Van der Merwe and Olivier 514; Scott 135. See also *Minister of Police v Rabie* 1986 1 SA 117 (A) 134 for the test to be employed in order to determine whether the actions of a public servant fall within or outside the scope of employment.

260 See ch 2 par 10.2.1 *supra*.

261 Neethling *et al* 355.

262 *Supra*.

263 Clause 2(1) schedule 1 of the Act.

(b) **Aviation Act 74 of 1962**

S 11(2) of the Act holds the owner of an aircraft strictly liable for damage caused by the aircraft by assuming intent on the part of the owner.[264] In the example of the "fly-by-wire" aeroplane given earlier,[265] injured parties will have an action based on strict liability for loss sustained against the owner of the aircraft.[266] The owner of the aircraft will in turn have a claim for damages against the developer of the defective ES.[267]

(c) **Nuclear Energy Act 92 of 1982**

S 41(1) of the Act makes the holder of certain nuclear licences strictly liable for all nuclear damage caused during the holder's period of responsibility. In case of damage caused through the use of an ES in the above instance, the relevant holder of such a license will be held strictly liable toward the injured parties.

(d) **Electricity Act 54 of 1986**

S 19 of the Act creates a rebuttable presumption of negligence on the part of the electrical undertaking,[268] which does not constitute absolute strict liability.

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264 Neethling *et al* 360 fn 158.

265 Ch 1 par 1.1 *supra*.

266 See ch 3 par 2.6.2 *supra*.

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268 Neethling *et al* 361 fn 167 criticizes this effect of the Act because of the high risk of damage that is created by electricity. *Cf* Van der Merwe and Olivier 556.

9. Joint wrongdoers

In terms of our common law, **joint wrongdoers** are people who co-operate consciously to commit a delict, and people who contribute causally to the same harmful result through independent wrongful conduct are regarded as **concurrent wrongdoers**.[269] The Apportionment of Damages Act[270] presently regulates the position. In terms of the Act the common-law distinction between joint and concurrent wrongdoers is abolished; only the term joint wrongdoers is retained and it is defined as "persons who are jointly or severally liable in delict for the same damage".[271] Joint wrongdoers may be sued in the same action and the court may order them to be jointly or severally liable and that payment by one of them shall absolve the others to the plaintiff. The court may also, if all the wrongdoers are before it, apportion the damages among them according to their relative degree of fault and give judgement against each of them for his/her part of the damage.[272] A defendant has a right of recourse from a joint wrongdoer if the joint wrongdoer is notified of the action before *litis contestatio*.[273] The Act applies to negligent as well as intentional wrongdoers.[274]

In the context of ES's it is possible that the developer or producer of the system, together with the other members of the development team such as the DE, KE, toolbuilder and the DE may be regarded as **joint wrongdoers** with the result that the provisions of Act 34 of 1957 will have to be considered when their liabilities are determined. Where the use of a defective ES causes injury, the user of the defective

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269 Neethling *et al* 257.

270 Act 34 of 1957.

271 S 2(1).

272 S 2(8). *Cf* Neethling *et al* 258.

273 S 2(2).

274 *Randbond Investments v FPS (Northern Region) (Pty) Ltd* 1992 2 SA 608 (W).

ES may also be a joint wrongdoer, depending on the circumstances.[275]

10. Conclusion

10.1 The Intelligent Assistant

The Intelligent Assistent is an interactive ES produced for use by a professional user as a tool or decision-aid in the practising of her profession.[276] Due to the nature of this particular type of ES, harm may be caused to the injured party because of a defect in the system, the incorrect use of the system or because an existing system was not used in circumstances where use thereof could have prevented the harm from ensuing. In all three instances mentioned, the user-wrongdoer is a professional person. This type of ES may consist of standard or custom software acquired from the producers by way of any of the accepted modes of acquisition established and discussed earlier.[277] In the case of harm caused by a defective system, the producers may be liable towards the injured parties on the basis of products liability or a negligent misrepresentation.[278] The possibility of a claim against the developers of a defective system based on their professional liability can only arise in respect of the liability of the DE who belongs to a recognised profession, since the software industry is not acknowledged as a profession yet.[279]

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275 All the criteria for delictual liability must be fulfilled.

276 See ch 2 par 11 *supra*.

277 See ch 3 par 2.6 *supra*.

278 See par 5.5 *supra*.

279 See par 6.6.1 *supra*.

10.2 The Self-Help System

The Self-Help System is produced for in-home use by lay persons to advise them on diverse matters ranging from professional services such as the rendering of legal advice, to technical matters such as how to clean a swimming pool[280] and as such is only used by non-professional users. This type of ES consists of standard software which is usually acquired from suppliers by way of a sale or lease. In the case of harm caused to an injured party because of a defective ES, a claim may be instituted against the developers of the system based on products liability or on negligent misrepresentation.[281] Once again, the DE may incur professional liability if the defect in the ES originates from the domain knowledge contained in the knowledge base. The **Self-Help System** carries a great risk of potential harm to the lay- user, especially those systems endeavouring to furnish professional advice in areas where damage to person or property is likely to occur.[282] The ordinary plaintiff is rendered powerless either by way of standard exclusion clauses in case of parties bound by contract, or by the hardship of proving negligence on the part of the producers. For these reasons, it is proposed that **strict liability** principles be adopted to hold producers liable to users in order to furnish compensation for loss suffered. ES's such as these are consumer products to which the policy reasons for the imposition of strict liability principles apply. Legislation in analogy to the product liability legislation of the EU and its member States should be implemented to effect this solution.[283] The legislation would only be applicable to defective ES software that causes harm to the person and property (other than the defective product itself) of the injured party and any exclusion of such liability should be proscribed. It may be advisable to limit the amount of compensation that can be claimed by determining

280 See ch 2 par 11 *supra*.

281 See par 5.5 *supra*.

282 For example a medical diagnostic ES: see ch 3 par 9.2.2 *supra*.

283 See ch 5 part II par 8 *supra*.

maximum damages. The possibility of a professional liability action against the developers of the system, once again arises.

10.3 The ES machine

The ES machine is an ES which forms part of a commercial product and is therefore a component part of the end-product. This type of ES produces a material output and can be used by a professional or non-professional user. In the case of harm caused by the **ES Machine** as a result of defective ES software, the injured party may, apart from the primary claim based on products liability against the manufacturer of the main product,[284] also have a products liability claim against the producers of the defective ES. As in the case of the previous two types of ES's, the possibility of a claim based on the professional liability of the DE may also arise.[285] Where harm is caused to a third party by the incorrect use or non-use of the system via a professional or non-professional user, the same liability principles apply to them as those applicable to the users of the **Intelligent Assistant** referred to above.[286]

284 For example

285 Par 6.5.1 *supra*.

286 Par 2.1 *supra*.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

1. Observations and comments

In this study an investigation was made of civil liability issues arising from the use of a particular type of software applications program namely expert systems (ES's). The appellation "expert systems" is already indicative of the very distinctive nature of these computer programs which lies in the ability to provide the user with expert advice or assistance in the solving of a problem or the execution of a task.[1] As such, ES's find application in a variety of areas, many of which are either safety-related, such as a "fly-by-wire" aviation system in an aeroplane[2] or others which are designed to replace specific professional services such as a medical expert system (MES) to diagnose illnesses.[3] It is therefore obvious that a grave risk of potential personal injury exists in the event of a fault in the ES, or when a sound ES is incorrectly used, or even when an existing ES is not used. In such circumstances it must be determined who the liable parties are, what the basis of their liability is and if the liability principles of our civil law are sufficient to solve the problem.

The investigation of ES liability-issues necessarily encompasses the whole spectrum of software liability. Because of this, many of the liability principles may be applicable to software in general. After an investigation of the nature and structure of ES's, two main groups of possible liable parties were identified, namely the producers and the users.[4] Thereafter all the possible contractual and delictual causes of action that can

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1 See ch 2 par 2.2 *supra*.

2 See ch 1 par 1.1 *supra*.

3 See ch 2 par 4.2 *supra*.

4 See ch 2 par 8 *supra*.

be brought against these two groups for the institution of claims for damages arising from injuries caused by the use of expert systems, as defined,[5] were determined. This was done by applying the general principles of the law of contract and the law of delict to the situation involving expert systems.[6] The producers will only incur liability from the use of a defective ES, whereas the users are at risk of incurring liability from the use of a defective ES, the incorrect use of a sound ES, as well as the non-use of an existing ES.

During the investigation of contractual causes of action it became apparent that most software computer contracts contain liability exclusion clauses whereby especially the developers of software are exonerated from any injurious consequences of their efforts.[7] Unlike the position in England and America,[8] South African users are not protected against such clauses by general legislative measures.[9] Because many software contracts are entered into between South African users and English or American software developers, the effect of exclusion clauses in their legal systems were discussed for the benefit of South African users.[10] For the same reason a discussion of the effect of a foreign "choice of law" clause in a contract entered into between a South African party and a foreign party was given.[11] The various types of software acquisition contracts were identified in terms of the general principles of the law of contract and it was pointed out that in the normal course of events, two

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5 Namely the use of a defective ES, the incorrect use of a sound ES and the non-use of an existing ES: see ch 1 par 1.4.1 *supra*.

6 See ch 3 pars 2 and 3 *supra*.

7 See ch 3 par 2.4.2 *supra*.

8 In both these jurisdictions unconscionable exemption clauses are outlawed: see ch 3 par 2.6.1 *supra*.

9 The SALC is currently investigating the possibity of protective legislation in this regard: see ch 3 par 2.4.2 *supra*.

10 See ch 3 par 2.6.1 *supra*.

11 See ch 4 par 4.4 *supra*.

types of contracts are entered into when software is acquired: (1) an acquisition contract existing between the supplier and customer-user; and (2) a licensing contract which exists between the developer and the user of the software.[12] It was pointed out that in the case of shrink-wrap licensing agreements, the rules relating to the so-called "ticket cases" will have to be followed in order to ascertain whether a valid contract came into being.[13] Because such a contract will in many cases not be validly concluded, rendering the developers' exemption clause ineffective, the user may have a delictual action against them in case of a defect in the system. In many cases the user will have both a contractual and a delictual action, therefore a discussion of the principles of concurrence was necessary.[14] The discussions of copyright, alternative dispute resolution forms and the effect of the Bill of Rights on civil liabilities were included for the benefit of the user entering into a software contract and also to furnish motivation for my argument that the delictual liability of the producer for damage caused by a defective expert system which is distributed on the mass market for direct use by a non-professional user should be grounded in strict liability.[15]

The final objective of this study was to discuss the various forms of delictual liability arising from the use of expert systems. For this purpose a comparative law study was undertaken, consisting of the legal systems of the two main members of the Anglo-American common law family, the United Kingdom and the United States and two continental law countries, the Netherlands and Germany.[16] No comparative law study is complete without referring to the influence of the steadily growing European

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12 See ch 3 par 2.5 *supra*.

13 See ch 3 par 2.5.2 *supra*.

14 See ch 4 par 2.2 *supra*.

15 See ch 4 pars 2.5 and 5.3 *supra*.

16 See ch parts I and III *supra*.

Union.[17] In the field of information technology in particular, the EU is exerting a strong influence and their current program of moving towards the standardization of differing national standards applicable to information technology products are commendable.[18] However, the most important influence of the EU is found in the adoption of the Directive on liability for defective products which was implemented by the member States including England, the Netherlands and Germany. In terms of this Directive, strict products liability for personal and property injury caused by a defective product is instituted as an additional regime of liability.

Liability for the use of defective software, including expert systems, is foremostly treated as products liability by all the legal systems investigated, provided the software can be regarded as a **product**. In this regard the distinction between a product and a service and the policy considerations behind them, plays a decisive role.[19] Products are synonymous to mass-produced tangible goods which can be sold or leased; services consist of a unique provision of intangible information or advice in terms of a contract for the rendering of services. Products are subject to strict liability whereas services are subject to negligence liability. Software is not a class-name to be characterised under either a product or a service: the nature of software differs according to a commercial and functional distinction as well as the specific application of the software.[20] The classification of ES's have proved to be especially contentious as a result of their complex nature. ES's of the type embodied in the Self-Help system and the ES Machine are regarded as products but the Intelligent Assistant has led to conflicting views. The problem stems from the fact that this type of ES consists of a culmination of a product and a service: advice from professionals that are usually given in a much more intimate and personal reliance situation is now available as a product, bringing different policy issues into play. In

17 See ch 5 part II *supra*.

18 ITSEC: see ch 5 part II par 3 *supra*.

19 See ch 3 par 2.6.1.1 *supra*.

20 See ch 2 par 10.1 *supra*.

addition, a further problem consists in the presence of an intervening user who may break the chain of causation between the defect and the damage. The overall opinion seems to be that this type of ES should rather be regarded as a service and not a product.[21] Whether software is regarded as a product or a service, consensus is reached that both should pass the "fitness for purpose" test. In this respect the application of product standards and quality assurance procedures are imperative. In the case of products liability compliance with the latter will negate the breach of a duty and point to the non-defectiveness of a product.[22] In the determination of negligence of the developer, compliance with standards and quality control procedures may result in the absence of negligence.

South African delictual principles are based on fault necessitating proof of negligence on the part of the developer which is almost impossible in the case of defective software due to the highly technical and complicated processes involved. The application of *res ipsa loquitur* is insufficient to help the plaintiff in this hardship.[23] For this reason it is argued that the liability of the developers for defective ES's should be based on strict liability. It will also be in line with the world wide access to justice movement which favours consumer protection and a doctrine of human rights.[24] The enactment of legislative measures to protect the interests of certain types of holders of rights are not uncommon in our law: for example, in the case of the interests of inventors and authors the generalising approach has been replaced by statutes to cope with those very distinctive rights.[25] Statutory regulation for the protection of certain private law interests may also be recommended for practical

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21 Comparative law conclusion: ch 5 *supra*.

22 See ch 6 par 5.2.2.1 *supra*.

23 See ch 6 par 5.2.3.3 *supra*.

24 See ch 4 par 3.7 *supra*.

25 The Patents Act 57 of 1978 and the Copyright Act 98 of 1978.

reasons.[26] The imposition of strict liability may also require the enactment of legislation.[27] In this study it is argued that claims for damages arising from personal and property damage caused by the direct use of ES's available on the mass market should be grounded on strict liability principles in analogy to the product liability regime followed in other jurisdictions.[28]

The possibility of a computer malpractice action against the developers of defective software systems have been raised in other jurisdictions.[29] Such an action only be instituted against a professional person who causes damage during the execution of her professional skills. A professional person's standard of skill and expertise is also higher than that of an ordinary person and it is not usual for a member of a profession to contract out of liability for damage caused by professional negligence.[30] Of all the legal systems researched, only England recognises software engineering as a profession and consequently holds software developers liable in terms of a professional standard of negligence.[31] Attention should be given to the attaining of professional status by the computer programming industry in South Africa as it would promote the achievement of higher standards in the development of software and contribute to the development of software products that are more "fit for use". Because of the absence of professional status among software developers

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26 See Neethling 1992 1 *Codicillus* 4-18 on the effect of computers on private law regarding the protection of privacy, trade secrets, patents and copyright. Although Neethling submits that the general delictual principles regulating personality protection in our law can be utilised effectively to achieve private law data protection, he advocates legislation (for practical reasons) to regulate such protection.

27 Eg the Aviation Act 74 of 1962 s11: see ch 3 par 3.4 *supra*.

28 For example in the UK, USA, Germany and the Netherlands: see ch 5 parts I and III *infra*.

29 See ch 5 part I pars A 2.7 and B 2.2.2.3 *supra*.

30 See ch 6 par 6.2 *supra*.

31 See ch 5 part I par A 2.7 *supra*.

it may also be difficult for injured parties to hold developers who lack the necessary skill and expertise, liable in terms of the *imperitia culpae adnumeratur* maxim,[32] for damage incurred.

2. Conclusion

Although it is inevitable that the law trudges slowly behind technological development, it is imperative that urgent attention is given to the liability issues arising from the use of high-technology applications such as expert systems which, by their very nature, carry an inherent risk of potential injury. The reason for urgency lies in the veritable software application explosion that is currently taking place on the commercial market. Standard package and custom software is becoming available at an astounding rate and ranges from virtual reality computer games to highly sophisticated professional systems that enable users to perform tasks they would otherwise not be competent or qualified to do. Many of these systems operate in fields of expertise that are statutorily controlled in the public's interest and in which the human operators or practitioners are required to register professionally before they may commence operating. At the moment these systems are distributed and applied for use unchecked without having to comply with any set standards or requirements which increases the possibility of faults leading to damage. Professional status should be given to the programming industry and the liability of developers of software, including ES's should be grounded in strict liability. This should be attained through specific legislation on the model of the EU Directive on liability for defective products.[33]

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32 See ch 3 par 3.3.3.3 *supra*.

33 85/374: see ch 5 part II par 8 *supra*.

3. Recommendations

3.1 Expert systems are products

During this investigation it was shown that all software should be regarded as products, irrespective of their type of output,[34] or the way in which they were acquired.[35] ES's as a particular type of software would then also qualify as a product in terms of which strict liability principles may apply.

3.2 Professional status for the software industry

The software industry should be recognised as a profession in order to promote higher standards of software programming and to hold developers of software liable to a higher level of skill and expertise.

3.3 Software standards and quality assurance procedures

The application of software standards and quality assurance procedures should be peremptory in the production of software products. Non-compliance with current international standards such as the ISO series must be taken into account when determining the defectiveness of a software product and also in the test for negligence with regard to software and ES liability.

3.4 Strict liability for software

Software liability should be based on strict liability because of the policy considerations based on consumer protection and the ability of the producers to spread their losses via insurance and the hardship of the injured party to prove

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34 Ie the functional distinction: see ch 2 par 10.1.1 *supra*.

35 Ie the commercial distinction: see ch 2 par 10.1.1 *supra*.

negligence on the part of the developer. In this regard it was shown that the development of *res ipsa loquitur* will not suffice to relieve the injured party since our courts are not as inclined as the Continental courts to effect a complete reversal of the burden of proof of negligence in such cases, or to require an impossibly high standard of rebuttal. The only way in which a speedy and effective strict liability regime can be effected is through legislation. This legislation should be in accordance with the EU Directive on liability for defective products and could contain a financial limit as to the total amount of damages which can be claimed for the same defect in similar products.

APPENDIX I

DEFINITION OF BASIC EXPERT SYSTEM TERMINOLOGY

TERM	*DEFINITION*
Algorithm	A formal procedure guaranteed to produce correct or optimal solutions; the most useful and least numerous sequence of steps required for solving a specified problem or achieving a certain goal; the fundamental process used by a program and developed by the human creativity of a programmer.
Application software	Software that performs a specific task for a user, such as word processing, auditing or playing a game.
Artificial intelligence (AI)	The part of computer science concerned with developing intelligent computer programs; program development geared toward simulating human behaviour which permits the perception of intelligent replications of human thought patterns.
Backward chaining	An inference paradigm or method which is goal-directed in that the system starts with the desired goal and works backwards in order to establish the facts needed to prove it.
Bespoke software	Software that is especially written to meet the particular requirements of the user; custom software
Binary system	A system consisting of only two states and using 0 and 1 to depict the two states.
Bug	A programming error, syntax misuse or logical misconstruction that causes a program to run improperly. This expression has been derived from the early days of computing when moths flew into a room-sized computer and caused a breakdown.
Certainty factor	A number that measures the certainty or confidence one has that a fact or rule is valid.

Computer program	A set of statements or instructions capable of causing a machine having information-processing capabilities to indicate, perform, or achieve a particular function, task or result; software.
Custom software	Software written to meet a customer's unique specifications; bespoke software.
Customized software	Existing software that is modified or supplemented to meet a particular customer's unique specifications.
Cyberspace	The space entered when communicating electronically; electronic space.
Data	A statement(s) of fact or a unit(s) of information.
Database	A collection of data in structured files which are retrievable and subject to manipulation; a body or set of related information.
Debug	To completely remove any programming errors from a software system.
Domain expert (DE)	A person who through years of training and experience has become extremely proficient at problem solving in a particular domain.
Domain knowledge	Knowledge about the problem domain, eg knowledge about geology with reference to an expert system for finding mineral deposits.
End-user	The person who uses the finished expert system; the person for whom the system was developed.
Expert system (ES)	A computer program or a collection of computer programs using expert knowledge to solve problems in the specific domain of knowledge.

Expert-system-building tool	The programming language and support package used to build the expert system.
Expert system shell (ES shell)	A system containing only an inference engine and a knowledge representation formalism without the actual knowledge.
Expert system toolbuilder	The programmer that builds the expert-system-tool used to build the expert system.
Explanation facility	That part of an expert system that explains how solutions were reached and justifies the steps used to reach them.
Firmware	Computer material comprised of hardware and software
Forward chaining	An inference paradigm or method which is data-directed in that the system works forward from known facts to reach the desired goal.
Frame	A knowledge representation method that associates features with nodes representing concepts or objects. The features are described in terms of attributes (called *slots*) and their values.
Hacker	A person who gains unauthorised access to the computer of another
Hard copy	A permanent representation of computer output, eg a print-out.
Hardware	The physical components of a computer system, eg the computer itself.

Heuristic	A rule of thumb or simplification that limits the search for solutions in domains that are difficult and poorly understood.
Hypermedia	Hypertext accompanied with audiovisual techniques; evolved hypertext.
Hypertext	Non-sequential writing; text that branches and allows choices to the reader.
Inference engine	That part of a knowledge-based system or expert system that contains the general problem-solving knowledge.
Inference paradigm	The technique or search strategy used by the inference engine to access and apply the domain knowledge; also called the inference method.
Input data	Data that is supplied to a computer system.
Knowledge	The information a computer program must have to behave intelligently.
Knowledge acquisition	The process of extracting the requisite domain knowledge from the domain expert and articulating it for representation in the expert system.
Knowledge base	The portion of a knowledge-based system or expert system that contains the domain knowledge.
Knowledge-based system (KBS)	A program in which the domain knowledge is explicit and separate from the program's other knowledge.
Knowledge engineering	The process of building expert systems.

Knowledge representation	The process of structuring knowledge about a problem in a way that makes the problem easier to solve.
Knowledge engineer (KE)	The person who designs and builds the expert system and is responsible for the knowledge acquisition from the domain expert.
Knowledge update facility	The part of an expert system that updates the knowledge base.
Neutral network	A knowledge representation method consisting of a network of concepts connected the same way as neurons in the brain.
Non-professional user	A person who is a layman in the domain of the ES and uses it to acquire professional advice or to execute a task.
Operation system software	Software that facilitates use of application software or manages the internal functions of the computer, such as the way information is loaded into the memory
Output data	Data that is received from a computer system.
Package software	Software that is mass-produced and distributed which is available to the public as a package. Also known as an "off the shelf" system.
Producer	The designer, developer or supplier of an expert system.
Production rule	A formal way of specifying a recommendation, directive, or strategy, expressed as IF *premise* THEN *conclusion* or IF *condition* THEN *action*.

Professional user A person of professional calling who uses an ES while rendering professional services eg a doctor, lawyer, etc.

Real-world problem A complex, practical problem of which the solution is useful in some cost-effective way.

Representation The process of formulating or viewing a problem so that it will be easy to solve.

Search The process of skilfully sifting the set of possible solutions to a problem so as to efficiently find an acceptable solution in an efficient manner.

Semantic net A knowledge representation method consisting of a network of nodes, standing for concepts or objects, connected by arcs describing the relations between the nodes.

Skill The efficient and effective application of knowledge to produce solutions in some problem domain.

Software A computer program (a set of statements or instructions capable of causing a machine having information-processing capabilities to indicate, perform or achieve a particular function, task or result); a program description (underlying information determining the instructions to be incorporated in the program), supporting material (documentation, user instructions, etc), or a set of several of these elements.

Support environment Facilities associated with an expert-system-building tool that help the user interact with the expert system. These may include sophisticated debugging aids, friendly editing programs, and advanced graphic devices.

Symbol	A string of characters that stands for some real-world concept.
Symbolic reasoning	Problem solving based on the application of strategies and heuristics to manipulate symbols standing for problem concepts.
Tool builder	The person who designs and builds the expert-system-building tool.
Toy problem	An artificial problem, such as a game or an unrealistic adaptation of a complex problem.
User	Any person who uses an expert system, such as an end-user, a domain expert, a knowledge engineer, a tool builder, or a support staff member.
User friendly	Easy to learn and use.
Virus	A set of computer instructions hidden in a computer's operating system or attached to a standard computer program. Benign viruses are designed to infect a computer without doing any actual damage to the computer or data. Malicious viruses attack computer systems in various ways, often disguising the damage caused until it is extensive.

APPENDIX II

LIST OF EXPERT SYSTEMS ILLUSTRATING THEIR APPLICATION AREAS

DOMAIN	*ES*	*PROBLEM/TASK*
Aviation	FLY-BY-WIRE	Piloting control system.
Chemistry	DENDRAL	Infers a compound's molecular structure from mass spectral and nuclear response data.
	CLONER	Helps the molecular biologist design and create new molecules.
	SECS	Helps chemists synthesise complex organic molecules.
Computer Systems	DART	Helps diagnose faults in computer hardware systems.
	XCOM	Configures VAX-11/780 computers.
Electronics	ACE	Diagnoses faults in telephone networks.
	EURISKO	Helps design 3-D microelectronic devices.
	SOPHIE	Teaches fault diagnosis in electrical circuits.
Engineering	REACTOR	Helps operators diagnose and treat nuclear reactor accidents.
	DELTA	Helps identify and correct malfunctions in locomotives.

DOMAIN	*ES*	*PROBLEM/TASK*
Geology	LITHO	Helps geologists perform oil well log analysis.
	MUD	Helps diagnose and treat problems related to drilling fluids used in drilling operations.
	PROSPECTOR	Helps geologists evaluate the mineral potential of a region.
Medical	PUFF	Diagnoses lung disease by interpreting data from pulmonary function tests.
	ABEL	Helps diagnose acid-base and electrolyte disorders.
	BLUE BOX	Helps diagnose and treat various forms of clinical depression.
	MYCIN	Helps diagnose and treat bacterial infections.
Military Science	ADEPT	Performs situation assessment by interpreting intelligence sensor reports.
	ACES	Performs the cartographer's job of map labelling.
	TATR	Helps Air Force targeteers develop plans for attacking enemy airfields.
Law	TAXMAN	Assists in the investigation of legal reasoning and legal argumentation in the domain of corporate tax law.
	JUDITH	Helps a lawyer reason about civil law cases with reference to the German Civil Code.
	TAX ADVISOR	Assists with tax and estate planning for clients with large estates.
	LDS	Assists in settling product liability cases. Given a description of a product liability case, it calculates defendant liability, case worth and an equitable settlement amount.

APPENDIX III

TABLE 1 : DESIGN RISK AREAS

RISK AREA	*DEFINITION*	*EXPOSURE*	*RISK/ CANDIDATE*
Mission statement	Concept of the completed application.	A faulty concept results in a faulty application. A target for blame is sought when users fail to use the system as anticipated.	Designer
Knowledge base	An organized collection of declarative and procedural relationships that represents expertise or heuristics in a domain. Accessed by a search program.	Knowledge-base content errors are incurred during knowledge acquisition, representation, and verification.	KE, DE, developer
Target audience	Group or type of users for whom the system is designed	If target audience isn't carefully identified, doesn't participate in the design, receives inadequate training and documentation,	Designer, developer

RISK AREA	*DEFINITION*	*EXPOSURE*	*RISK/ CANDIDATE*
		and doesn't contribute to maintenance and enhancement decisions, users will think the system inadequate and output may be applied inappropriately or incorrectly.	
Explanation subsystem	Provides input interpretation and result rationale for users.	Inadequate explanation subsystem can confuse users, leading to erroneous input and output. Terminology can be also misinterpreted.	KE, designer
Type and extent of user input	User needs and recommendations, target-market information, and other data are used to determine target-user characteristics beyond mere audience identification.	If input requirements are not matched with the knowledge and skills of targeted users, they may input information incorrectly, resulting in invalid output that can lead to erroneous solutions.	Developer, designer, KE

RISK AREA	*DEFINITION*	*EXPOSURE*	*RISK/ CANDIDATE*
Number of results	Application design should consider user-driven results. Single results are directive: multiple results provide options to be considered by the user as input for another selection or decision.	Single results can mislead the user into deciding that only one solution, which may be inappropriate, is possible. Multiple results require the user to use them as input for determining another selection or decision.	Case: *single results*- designers developer; *multiple results* - users
Knowledge-base source	Origin of the knowledge and rules of the knowledge base of the system. The accuracy of the application is directly proportional to the accuracy, completeness, and currentness of the knowledge base.	An inaccurate, incomplete, or out-of-date knowledge base can result in inaccurate, incomplete, or inappropriate output, leading to erroneous decision making. Experts may provide incorrect information and not understand the information or requirements.	DE

RISK AREA	*DEFINITION*	*EXPOSURE*	*RISK/ CANDIDATE*
Training	Instruction and documentation necessary for user to use the system appropriately. Should be provided soon after distribution of the application.	Many exposures may have the same results, including oversight of the need for training, training that doesn't adequately cover system functioning and maintenance, training offered but not attended, training taken but ignored. Any of these can result in hardware or software failure due to user mishandling.	Depends on if user or developer did the training. Training: not offered (designer, developer); inadequate (developer, designer); offered but not attended (supplier, users); taken but ignored (user).
Maintenance	Should be planned and responsive. Planned maintenance includes system updates and revised or appended documentation and provides quality system functioning.	*Planned:* knowledge base should be updated, validated, and distributed when new and corrective knowledge arises.	Developer, designer, DE, KE, supplier

RISK AREA	*DEFINITION*	*EXPOSURE*	*RISK/ CANDIDATE*
	System glitches require responsive maintenance. Users should be able to expect manufacturer's prompt attention to system malfunction. User support systems are a part of maintenance planning.	*Responsive:* modification of an on-line system is nightmarish; locating the needed knowledge-based file is nearly impossible. *Support systems:* ensuring that support staff's knowledge and skills are up-to-date; support in heuristic knowledge and technical expertise must be current and available to users.	
Problem definition	Detailed definition, bounding, and description of the problem or task to be addressed by the system.	Problem is larger than anticipated and lacks definition; system inadequately resolves the problem.	Designer, developer

RISK AREA	*DEFINITION*	*EXPOSURE*	*RISK/ CANDIDATE*
System documentation	Written records of system functioning (procedures for all functions); and maintenance (information about system functioning, troubleshooting, coding, construction, and so on).	Critical elements fail to be included in the system's documentation. Documentation not current or readily accessible may result in errors and injury.	Designer, developer

TABLE 2 : EXECUTION RISK AREAS

RISK AREA	*DEFINITION*	*EXPOSURE*	*RISK/ CANDIDATE*
Inference engine	*Commercial shell:* little possibility the code has bugs in the original copy of the program; however, data corruption can happen during duplication. *Programmed:* faulty coding, linking.	Bugs in the inference engine.	Toolbuilder, KE
Program	Program bugs (not content errors) result from incorrect links or branches or an improperly generated rule tree.	Can lead to the incorrect linking of input with output, leading to poor decisions for application of output.	Toolbuilder, KE
User input	Drives the branching within the application.	If the user improperly keys an input or makes an incorrect input, the results will probably not match user intent.	User

System output	Heuristic knowledge isn't always accurate. User must exercise judgment.	Undue user reliance on system output. System output can be used incorrectly.	User

APPENDIX IV

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Latent Damage Law - The Expert System

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APPENDIX VI

EU DIRECTIVE ON LIABILITY FOR DEFECTIVE PRODUCTS

ARTICLE 1

The producer shall be liable for damage caused by a defect in his product.

ARTICLE 2

For the purpose of this Directive 'products' means all movables, with the exception of primary agricultural products and game, even though incorporated into another movable or into an immovable. 'Primary agricultural products' means the products of the soil, of stock-farming and of fisheries, excluding products which have undergone initial processing. 'Product' includes electricity.

ARTICLE 3

1. "Producer" means the manufacturer of a finished product, the producer of any raw material or the manufacturer of a component part and any person who, by putting his name, trade mark or other distinguishing feature on the product presents himself as its producer.

2. Without prejudice to the liability of the producer, any person who imports into the Community a product for sale, hire, leasing or any form of distribution in the course of his business shall be deemed to be a producer within the meaning of this Directive and shall be responsible as a producer.

3. Where the producer of the product cannot be identified, each supplier of the product shall be treated as its producer unless he informs the injured person, within a reasonable time, of the identity of the producer or of the person who supplied him with the product. The same shall apply, in the case of an imported product, if this product does not indicate the identity of the importer referred to in paragraph 2, even if the name of the producer is indicated.

ARTICLE 4

The injured person shall be required to prove the damage, the defect and the causal relationship between defect and damage.

ARTICLE 5

Where, as a result of the provisions of this Directive, two or more persons are liable for the same damage, they shall be liable jointly and severally, without prejudice to the provisions of national law concerning the rights of contribution or recourse.

ARTICLE 6

1. A product is defective when it does not provide the safety which a person is entitled to expect, taking all circumstances into account, including:

   (a) the presentation of the product;
   (b) the use to which it could reasonably be expected that the product would be put;
   (c) the time when the product was put into circulation.

2. A product shall not be considered defective for the sole reason that a better product is subsequently put into circulation

ARTICLE 7

The producer shall not be liable as a result of this Directive if he proves;

(a) that he did not put the product into circulation; or
(b) that, having regard to the circumstances, it is probable that the defect which caused the damage did not exist at the time when the product was put into circulation by him or that this defect came into being afterwards; or
(c) that the product was neither manufactured by him for sale or any form of distribution for economic purpose nor manufactured or distributed by him in the course of his business; or
(d) that the defect is due to compliance of the product with mandatory regulations issued by the public authorities; or
(e) that the state of scientific and technical knowledge at the time when he put the product into circulation was not such as to enable the existence of the defect to be discovered; or
(f) in the case of a manufacturer of a component, that the defect is attributable to the design of the product in which the component has been fitted or to the instructions given by the manufacturer of the product.

ARTICLE 8

1. Without prejudice to the provisions of national law concerning the right of contribution or recourse, the liability of the producer shall not be reduced when the damage is caused both by a defect in product and by the act or omission of a third party.

2. The liability of the producer may be reduced or disallowed when, having regard to all the circumstances, the damage is caused both by a defect in the product and by the fault of the injured person or any person for whom the injured person is responsible.

ARTICLE 9

For the purpose of Article I, "damage" means:

(a) damage caused by death or by personal injuries;
(b) damage to, or destruction of, any item of property other than the defective product itself, with a lower threshold of 500 ECU, provided that the item of property;

(i) is of a type ordinarily intended for private use or consumption, and

(ii) was used by the injured person mainly for his own private use or consumption.

This article shall be without prejudice to national provisions relating to non-material damage.

ARTICLE 10

1. Member States shall provide in their legislation that a limitation period of three years shall apply to proceedings for the recovery of damages as provided for in this Directive. the limitation period shall begin to run from the day on which the plaintiff became aware, or should reasonably have become aware, of the damage, the defect and the identity of the producer.

2. The laws of Member States regulating suspension or interruption of the limitation period shall not be affected by this Directive.

ARTICLE 11

Member States shall provide in their legislation that the rights conferred upon the injured person pursuant to this Directive shall be extinguished upon the expiry of a period of 10 years from the date on which the producer put into circulation the actual product which caused the damage, unless the injured person has in the meantime instituted proceedings against the producer.

ARTICLE 12

The liability of the producer arising from this Directive may not, in relation to the injured person, be limited or excluded by a provision limiting his liability or exempting him from liability.

ARTICLE 13

This Directive shall not affect any rights which an injured person may have according to the rules of the law of contractual or non-contractual liability or a special liability system existing at the moment when the Directive is notified.

ARTICLE 14

This Directive shall not apply to injury or damage arising from nuclear accidents and covered by international conventions ratified by the Member States.

ARTICLE 15

1. Each Member State may:

(a) by way of derogation from Article 2, provide in its legislation that within the meaning of Article 1 of this Directive "product" also means primary agricultural products and game;

(b) by way of derogation from Article 7(e), maintain or, subject to the procedure set out in paragraph 2 of this Article, provide in this legislation that the producer shall be liable even if he proves that the state of scientific and technical knowledge at the time when he put the product into circulation was not such as to enable the existence of a defect to be discovered.

2. A Member State wishing to introduce the measure specified in paragraph 1(b) shall communicate the text of the proposed measure to the Commission. The Commission shall inform the other Member States thereof.

The Member State concerned shall hold the proposed measure in abeyance for nine months after the Commission is informed and provided that in the meantime the Commission has not submitted to the Council a proposal amending this Directive on the relevant matter. However, if within three months of receiving the said information, the Commission does not advise the Member State concerned that it intends submitting such a proposal to the Council, the member State may take the proposed measure immediately.

If the Commission does submit to the Council such a proposal amending this Directive within the aforementioned nine months, the Member State concerned shall hold the proposed measure in abeyance for a further period of 18 months from the date on which the proposal is submitted.

3. Ten years after the date of notification of this Directive, the Commission shall submit to the Council a report on the effect that rulings by the courts as to the application of Article 7(e) and of paragraph 1(b) of this Article have on consumer protection and the functioning of the common market. In the light of this report the Council, acting on a proposal from the Commission and pursuant to the terms of Article 100 of the Treaty, shall decide whether to repeat Article 7(e).

ARTICLE 16

1. Any Member State may provide that a producer's total liability for damage resulting from a death or personal injury and caused by identical items with the same defect shall be limited to an amount which may not be less than 70 million ECU.

2. Ten years after the date of notification of this Directive, the Commission shall submit to the Council a report on the effect on consumer protection and the functioning of the common market of the implementation of the financial limit on liability by those Member States which have used the option provided for in paragraph 1. In the light of this report the Council, acting on a proposal from the Commission and pursuant to the terms of Article 100 of the Treaty, shall decide whether to repeal paragraph 1.

ARTICLE 17

This Directive shall not apply to products put into circulation before the date on which the provisions referred to in Article 19 enter into force.

ARTICLE 18

1. For the purposes of this Directive, the ECU shall be that defined by Regulation (EEC) no. 3180/78, as amended by Regulation (EEC) no. 2626/84. The equivalent in national currency shall initially be calculated at the rate obtaining on the date of adoption of this Directive.

2. Every five years the Council, acting on a proposal from the Commission, shall examine and, if need be, revise the amounts in this Directive, in the light of economic and monetary trends in the Community.

ARTICLE 19

1. Member States shall bring into force, not later than three years from the date of notification of this Directive, the laws, regulations and administrative provisions necessary to comply with this Directive. They shall forthwith inform the Commission thereof.

2. The procedure set out in Article 15(2) shall apply from the date of notification of this Directive.

ARTICLE 20

Member States shall communicate to the Commission the texts of the main provisions of national law which they subsequently adopt in the field governed by this Directive.

ARTICLE 21

Every five years the Commission shall present a report to the Council on the application of this Directive and, if necessary, shall submit appropriate proposals to it.

ARTICLE 22

This Directive is addressed to the Member States.

SELECTED ABBREVIATIONS

ADR	Alternative dispute resolution
AI	Artificial intelligence
ALI	American Law Institute
AJCL	*American Journal of Comparative Law*
AIM	*AI Magazine*
BGB	*Bürgerliches Gesetzbuch*
BW	*Burgerlijk Wetboek*
CILSA	*Comparative and International Law Journal of South Africa*
CL&P	*Computer Law and Practice*
CLJ	*Computer Law Journal*
CLSR	*Computer Law and Security Report*
CPA	Consumer Protection Act 1987
CR	*Computer und Recht*
CSIR	Counsel for Scientific and Industrial Research
DCJ	*Defence Counsel Journal*
DE	Domain expert
DIN	*Deutsche Industrie Normen*
DLR	*Depaul Law Review*
DR	*De Rebus*
EC	European Community
ECJ	European Court of Justice
EDN	*Electronic Data News*
EFTA	European Free Trade Association
ELJ	*Emory Law Journal*
ES	Expert system
EU	European Union
Hastings I&CLR	*Hastings International and Comparative Law Review*
HTLJ	*High Technology Law Journal*

ILJ	*Industrial Law Journal*
ISO	International Standards Organisation
IT	Information technology
ITSEC	Information Technology Standards of the European Community
IUR	*Informatica und Recht*
JJ	*Jurimetrics Journal*
KE	Knowledge engineer
KBS	Knowledge based system
LAWSA	*The Law of South Africa*
LES	Legal expert system
L&PIB	*Law and Policy in International Business*
LQR	*Law Quarterly Review*
LT	*Law Technology*
MES	Medical expert system
NJB	*Nederlands Juristenblad*
NBW	*Nieuw Burgerlijk Wetboek*
NZLJ	*New Zealand Law Journal*
OJ	*Official Journal of the European Union*
PHG	*Produkthaftungsgesetz 1989*
PN	*Professional Negligence*
Rutgers C&TLJ	*Rutgers Computer and Technology Law Journal*
SABS	South African Bureau of Standards
SACJ	*South African Journal of Criminal Justice*
SAJHR	*South African Journal for Human Rights*
SALC	South African Law Commission
SALJ	*South African Law Journal*
SA Merc LJ	*South African Mercantile Law Journal*
SEA	Single European Act 1986
SGA	Sale of Goods Act 1979
SGSA	Supply of Goods and Services Act 1982

STELL LR	*Stellenbosch Law Review*
THRHR	*Tydskrif vir Hedendaagse Romeinse-Hollandse Reg*
TILJ	*Tulane International Law Journal*
TSAR	*Tydskrif vir Suid-Afrikaanse Reg*
UCC	Uniform Commercial Code 1978
UCTA	Unfair Contract Terms Act 1977

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