INFORMATION SCIENCE AND THE CONFIGURATION OF MEANINGFUL INFORMATION

by

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SUMMARY

This investigation addresses different viewpoints regarding the configuration of meaningful information in the context of different environments, such as the information society, ontological milieu, interpretation and representation. It is important to explore options in terms of which the configuration of meaning can be pursued. Information science should be seriously considered as an explorer and configurer of meaningful information. For information science to become such an explorer, the discipline needs to be approached not as yet another science to involve and concern itself with information and its related aspects, but as a special kind of science. This investigation proposes that it should be seen and developed as an interscience. Disciplinary boundaries do not imply that they are fixed and these boundaries, especially of an interscience, can be approached as constantly moving and changing. This allows for interchange between disciplines and continued growth without losing the unique characteristics of information science.

Keywords:
information; information science; interscience; knowledge; meaningful information.

CONTENTS

INTRODUCTION

We find ourselves in an age where information is viewed so central to survival and progress that it is often referred to as the information age. In this age we have access to an incredibly large amount of information, which is still expanding. It is, however, at a cost because it is very difficult to cope with, let alone utilise. Dupuy (1980:10) summed it up in the paradox of "more and more information, less and less meaning." Without meaning no amount of information will increase value or impact. For this reason the configuration of meaningful information is central to this study. It is also for this reason of the utmost importance that we explore ways and means in terms of which the configuration of meaning can be pursued. We could seriously consider information science as one such way, as an explorer and configurer of meaningful information. Note here, the mention of exploration and not discovery. This will impact on how we will approach the subject field of information science. The role of information science will not be a passive one, but one of active participation in the configuration of meaningful information. For information science to become such an explorer, the discipline needs to be approached not as yet another science to involve and concern itself with information and its related aspects, but as a special kind of science. What is proposed here is that it should be seen and developed as an interscience.

Before we can begin to consider information science as an interscience, we will need to consider the key concepts, relevant for the configuration of meaningful information. A major reason for a definitional detour is the inherent contradictions involved in an overload of information, and the postulated benefits of a society strongly based on information. This will specifically be attended to according to the myths of an information society, as identified by Dupuy. To overcome the paradox of Dupuy we need a systematic approach to be able to arrive at solutions within an ever changing, but sometimes oddly stagnant view of, context and environment. The first essential aspect of such a system (understood as an open-ended system) is the configuration of meaningful information, in other words not only finding meaningful information, but also turning information into something meaningful. The second aspect is the role of information science in this regard (ie of the first aspect). The third aspect relates closely to the first two aspects. This is the question of what kind of information science will be able to fulfil

such aims. Information science needs to become that kind of science, which we refer to as 'interscience'. The present state of information science does not seem very promising in reaching these goals and needs to become a formal and systematic, yet flexible, approach.

The discussion on information science depends on the consideration of the core concepts of 'information' and 'knowledge'. These are not approached as concepts to be defined as words, but specifically as concepts. Only through conceptualisation can we hope to form a clear view of the complexities surrounding the varied uses and contexts of the concepts. It is also crucial to attend to these concepts before we turn to the configuration of meaningful information, especially when attending to the relationship between information, knowledge and meaning. Ultimately it is knowledge that concerns us in a configuration of any meaningful information. It is important because it is such configured meaningful information that will lead to, intensify, and challenge our existing state of knowledge. This relation impacts on the physical milieu of an information society. The information society, whether we consider it to be one or not, is the milieu within which we will be placing the configuration of meaningful information.

We need to locate the ontological milieu of meaningful information. This is done by looking at the meaning of being or existence, being in the world, and the relationship of *Dasein* to 'others' in that world. Exactly where will information science be the explorer and configurer of meaningful information? Perhaps in those areas so often neglected in the study field of information science. Chosen for this study are those areas of which the exclusion is considered detrimental to the development of information science as an interscience. These are language (attended to in Semiotics, but seldom strongly in our context here), image, aesthetics, madness and power. Concepts such as 'power', 'meaning', and ‘understanding’ will appear frequently. They are unavoidable in the main discussion, and appear often in the literature. The role of power, for instance, has an influence on what we consider meaningful information to be; and the meaning of ‘meaning’ itself is as labyrinthian as the meanings of information and knowledge.

The above accentuates the importance of determining what information science is about, and what kind of challenges it has to face. As a science, information science includes particular elements, such as a research methodology, aims and objectives, functions, practical and theoretical aspects, training and education. These elements are essential to properly directed actions. As a possible way of dealing with, and making sense of, disturbing and disruptive, but also creative, factors such as knowledge, power, and action, information science needs to be rearticulated. These factors are not the negative side of disruption and disturbance, but can prove to be of great value in an information society that seems to shy away from strangeness. Such a society seems to avoid action due to its resulting challenges that must be faced. Shaped and guided by meaningful information, these challenges can be successfully met. These factors are central to an understanding of how, why, and in which way we are going to configure meaningful information.

The configuration of meaningful information is precisely information *for* action. But for a science to cope with this there are certain suggested or proposed requirements to comply with. The last part of the study focuses specifically on information science. Disciplinary boundaries do not imply that they are immovable, stagnant, fixed, or dormant. These boundaries, especially of an interscience, can be approached as constantly moving and changing borders (also called 'fault-lines'). Such fault-lines allow for creative interchange between disciplines, concepts, and continued growth without lowering the unique structure and characteristics of information science as a science.

CHAPTER 1
INFORMATION AND KNOWLEDGE

1.1 Introduction

Our first consideration will be what information and knowledge are, or are about, before we begin to look at meaningful information. Even though information and knowledge are unique concepts, a very close relationship exists, and it is often difficult, if not impossible, to define the one without making mention of the other. It is this close relationship that is important in determining when information is meaningful or acceptable, and when not.

We pay attention first to information, then knowledge. This order should not be a linear understanding, as is often the case, that we first have percepts, then data[1], then information, then knowledge, then wisdom. There is no linear order determining that the one must exist before the other can come into being, the arrangement is rather circular and undifferentiated (Mizrachi 1998:178). This should become clear in the discussion on information and knowledge. Definitions of concepts are often limited in the sense that it briefly states what something is, but not always what it is about. Information and knowledge will be conceptualised. Reference will be made to the field of information science, especially since the various approaches to central concepts such as 'information' and 'knowledge' have implications for the proper demarcation and understanding of the nature and targets of the subject field.

[1] Data will be treated as a singular noun (a unified concept is intended) (*Chambers 21st Century dictionary* 1996, sv 'data').

1.2 Information

There is an incredible amount of literature available on the meaning of 'information'. Kochen (1983a:278) focuses our attention on the changes that have taken place in approaches to 'information' as concept since the 1950s. It ranges from the simplistic view that information reduces uncertainty to the view that information is decision-relevant data. Schrader refers to such multiplication as “conceptual chaos” (Schrader 1986:179). He strongly urges that we should define fundamental concepts clearly, and avoid certain others, specifically 'information'. Another warning is against the understanding of the concept 'information' as an entity, or some universal essence. According to Fairthorne (Schrader 1986:180; Wersig 1997:220) we should say what we mean, rather than using the concept 'information' as an easy way out. We will not avoid the use of the concept ‘information’, due to the implications of the improper use and definition of a concept such as 'information', and the drawbacks it holds for the definition of information science. This is especially so because conceptual chaos and confusion will negatively impact on the aims and efforts of information science (Schrader 1986:179-180).

Many views on what information is appear contradictory, perhaps because the authors define from within different backgrounds and understanding, unique to their field of expertise and conviction, as well as the time period in which they define it. As with other concepts, the concept of information did not remain unchanged. Through time information moved from its original popularisation in a mathematical theory, to different disciplines and contexts, ranging from communication, linguistics, psychology, sociology, to biology. Such movement resulted in information being conceptualised in other ways and related to other concepts and contexts. Everyone use the concept information, but mean something different by it (Wersig 1997:220-221).

The concept 'information' literally means to give form or shape to something. A very linear view is that data becomes information when data is structured to convey a message and form a meaningful system. People, receiving and understanding this message, may or may not benefit from it. This message has the power to change someone's existing mental state and image of reality, but for this to happen, the message must comprise information for the recipient (a meaningful message). Information,

according to Thompson (Belkin 1978:79), can be considered as the organisation of sense-data and experience. Such information may lead to the reduction of uncertainty or to the increase of uncertainty. Successfully communicated information will not only change, but increase the existing knowledge, or confirm it. It is not only the recipient's state of knowledge that may be affected, but also of the generator's knowledge structures. (Wersig 1997:222).

Kochen (1983b:374) refers to 'to be informed' as the experiencing of change in a cognitive structure, and 'to inform' as effecting such an experience of change. Data remains data unless it communicates meaning, knowledge, ideas. Porat (in Lyon 1988:10) similarly defined information as data that has been organised and communicated.

Another definition, related to that of Porat, is by Ingwersen who defines information as "generated and perceived data which may transform knowledge states producing various kinds of action" (Ingwersen 1992:309). Using our senses, we can obtain information from a source, object, or entity that contains information which can reduce uncertainty. Negative or misinformation forms an intricate part of the fuller picture of information, such as illusion, propaganda, misrepresentation, concealment, deception. Neither does an increase in information decrease uncertainty. Related to uncertainty is risk. Information does not reduce risk, but makes more clear the degree of risk and its nature. It makes risk-taking more informed, not less risky (Kochen 1983a:289).

The information process is often influenced by manipulation, willingness, and other additions to that process (Schrader 1986:179). Information inputs are not merely part of the act of acquiring information. These inputs may be rejected, accepted, altered, related and/or measured. Not all definitions take into consideration the large variations in human behaviour, including imagination, curiosity, creativity, free will, and habit. The concept 'information' is used in so many different senses, and in such a variety of contexts, that it can become quite difficult to interpret when the author of a text, for example, is referring to documents, notions, sensations, or printed marks. The variety of definitions have two aspects in common, that is the material and immaterial characteristics of information. This bipolar nature of information is not reflected in all definitions, but implied by the

absence of the one characteristic. We find then that only one aspect, for example the material characteristic, of information is explored or accentuated by the definition. This is complicated by the view that although information has always been part of our human existence, it has been forced into the spotlight by rapid technological developments, an increase or growth of knowledge, a deeper acceptance of the importance of information (ie more than a superficial focus on its value as a resource), and the contemporary pace at which we live (Debons, Horne & Cronenweth 1988:1-2, 158; Schrader 1986:180).

Technological developments especially influence, and support, the many definitions which, as part of the information process, emphasise strongly the 'transfer' of information (referring here to the transfer of meaning and not the physical processes of transmission) where a person becomes informed and aware. Becoming aware of data, though, does not mean that we have acquired knowledge, but only that we have become informed. It also does not really define information itself. If, according to Debons *et al* (1988:6), we store it in our minds (cognitive representation) or write it down (physical representation), then these representations of data that we are aware of, constitute 'information'.

Davenport quotes a similar definition of information: " ... any physical form of representation, or surrogate of knowledge, or of a particular thought, used for communication" (Davenport 1992:287). This definition of Farradane, which provides objects for study and allows for predictable factual outcomes which can be verified via experimentation, seems to be what Schrader warned against earlier on, that is, understanding and presenting information as an external entity and reality (Schrader 1986:180).

It is a fundamental characteristic of humankind to externalise mental processes by reproducing them outside him- or herself into material symbols and cultural ideas. Information is often regarded as a commodity in the economic sense, where someone can control or possess a body of information, and determine its availability and cost (Debons *et al* 1988:2). Coming back to our earlier reference to two typical approaches to information, we can define information according to material and non-material categories, varying from seeing information as an external movement, information as process, information as an object (entity), to information as facts or data elements (Debons *et al*

1988:4). Context and intention (eg political, economic) of use play a role in whether we refer to information as a material or non-material concept, which is not always indicated clearly in information science related definitions.

At this point we may even agree with Debons *et al* that defining ambiguous concepts such as information adds additional complications, such as the lack of agreement among those using the concept, and its applicability to a continuation of cognitive states, ranging "from sensory awareness to synthesis of ideas" (Debons *et al* 1988:4). It is also the 'how' or method of obtaining information that adds its own complications, for instance interpersonal exchange. Other examples are our own knowledge obtained from experience, a personal collection of sources (recorded), organisations such as the library, etc. The thinking process involves the continuous processing of information. The 'how' of information also involves the environment. We take information in from our environments, do things to it, and use it in our interaction in and with the world. The message only informs after being experienced through the senses and the mind has formed percepts of it. The message also has to be understood to be able to inform, and it must not be a mere repetition of what the recipient already knows (Crane 1995:111; Penzias 1989:21).

Earlier definitions, such as that by Artandi and Otten (Belkin 1978:69), associate information with matter and energy (information embedded in or transmitted by forms of energy) by seeing it as that which stands for all non-material aspects and interactions, as well as for knowledge. Information is then the interpretation of external (outside the mind) stimuli. Information as energy implicates that it can be measured in a way similar to a physical entity (Debons *et al* 1988:2). The internal changes it may result in are not always observable on an external level. One information concept may lead to different ideas of interpreted information to exist in the mind of one person. Reflection on the acquired information may lead to further ideas developing without further external input. This information event is the structuring of what one experiences. The effect of information in such a system is the change in the organisation of the subject. Information is capable of changing and transforming existing structures. The sender deliberately structures the message to affect the image structure of the receiver. To be able to do this, the sender needs to have prior knowledge of the receiver's structure.

Depending on the intended use, information can be a commodity, a process, a state of knowing, an environment, or a message. This kind of conceptualisation approach to information can be understood as information being the result of processing activities (of data). Such information has real or perceived value and is seen as adding to the existing knowledge of the recipient or user. Such information should at the same time be relevant to a given situation (present or future). (Belkin 1978:65-80; Brinberg 1989:61-62; Nitecki 1985:388-389).

One of the reasons offered by Kochen as a possible impetus to changes in the definitional literature, is the initial uncritical adaptation of the mathematical communication theory which created unrealistic expectations. What many of those who adopted this theory ignored, was the insistence of the creators of the mathematical communication theory that it was important to distinguish between meaning and information. Information is separated from meaning and imprecise interpretations which could interfere with the transmission-rates of information as codes. This contributed to the eventual dominance of data processing using computers, and information denoting processed data (Kochen 1983b:371-72; Wersig 1997:220). Budd emphasises how the technological revolution led to serious changes in the information needs of users and the different forms in which they acquire and require information (Budd 1992:44).

These changes also show us how limited our definitions of information have become. Narrow conceptions lead to narrow applications, and less space for creative thinking. In mathematics, physics, and engineering, information is related to order, energy, entropy, organisation and control. Information was seen as the key to the unknown, especially because it was seen as being able to offer answers to how nature is organised and how systems are formed and maintained, and unlocking the mysteries of life and mind (Kochen 1983b:371).

The dominant definition of information, in a very different context, has in essence, remained as that which reduces uncertainty, and which was transmitted as message to a receiver over a “noisy transmission channel” (Kochen 1983b:372). Information is used and understood in its technical sense, signifying what is transmitted (as flow or pattern) over a communication channel, and its main aim being the reduction of the receiver's uncertainty.

Acknowledgement of the double (or rather multiple) nature of information, which comes to the fore when we try to conceptualise 'information', allows for the inclusion of its many characteristics. There are different approaches to information, and Wersig (1997:225) suggests an integrated, if ambiguous, group of concepts. These include constructivism, systems theory, action theory, and modernisation theory. If information is defined as the reduction of complexity or disorientation, it will change every time it is used. The information used will change according to the context of its use and measurement. Information is perhaps always the organising factor for knowledge. This allows for the co-existence of more than one meaning of information (Wersig 1997:225).

1.3 Knowledge

Using the insights of Gernot Wersig (1990), knowledge will be approached from two perspectives as identified by Wersig. One benefit of such an approach is the opportunity it offers in finding some order from a seemingly chaotic literature on knowledge (a situation similar to that of the concept of information). As in the case of information, we will use ‘definition’ and ‘concept’ in the following manner: ‘definition’ here refers to the “what it is” approach of dictionaries; and ‘concept’ refers to a deeper meaning-making or conceptualisation, which takes context (why, how, and when it is what it is) into consideration. Our specific purpose and context is in the configuration of meaningful information, and information science. Before we can deal with these matters, we need to be clear on what we are dealing with first.

The two main perspectives of knowledge are aesthetics and calculus. This may seem similar to other dualistic approaches to knowledge, such as theoretical and practical, direct and indirect, a priori and a posteriori, sensation and mind, material and immaterial,

experience (empirical) and reason (rational), communal and individual, stable and state-of-flux. They are all characteristics of the concept of knowledge, and should not be treated as the one being subordinate to the other. According to Weizenbaum (1984:11) there is a necessity to be wary of the strong tendency to trust modern science as the only source of reliable knowledge of the world. We need to reinstitute a *comprehensive* relationship. Neither science (as calculating reason) nor pure intuition can ever 'contain' all the things that the world is. It can only offer an attempt to conceptualise these things, including an allowance and tolerance for the unreachable (Weizenbaum 1984:277).

The original duality was inherited from how our knowledge of the knowledge universe grows and our world changes. We inherited two parallel developments caused by a critique of the Renaissance. One development was the ideological (reason, 'pure' thought), within which cultural and religious systems transfer answers to the concrete world. The other, initially parallel, development was the scientific. This development was based on calculus and depended on empirical evidence (sensory experience, empirical truth). The scientific model of calculus became dominant, especially due to strong information technology developments (functional dimension), and was realised as the basis of rational behaviour, which distinguishes humans from animals, but led to unfortunate similarities drawn between humans and machine. The concept of knowledge was influenced as strongly as that of information by the suppression of the potentials of aesthetics in favour of the potentials of calculus.

The seemingly irreconcilable models of calculus and aesthetics are related to each other if we consider that which makes humans unique, as well as human potentials. These potentials we have even in a world dominated by a scientific model. Examples of such potentials are playing, phantasy, illusion, beauty, hate, sadness, happiness, mental images, self-consciousness. These potentials determine our success and survival in a world dominated by a singular focus on, and investment in, modern technological and scientific developments. Besides these potentials, humans have a potential for calculus. Humans control their potentials, mix them with calculus, and let them interact (Wersig 1990:191). The chapter on the information society shows how important this interaction is.

Before we conceptualise knowledge it is necessary to consider a typical dictionary definition. The *Chambers 21st century dictionary* (1996, sv 'knowledge') defines 'knowledge' as “the fact of knowing, awareness, understanding, the information one has acquired through learning and experience.” What is emphasised is that knowledge is always knowledge about something. To know something is a type of condition called a disposition or aptitude. Most definitions link knowledge to information by stating that knowledge is not just a consciousness of information, it is beyond awareness; it can be useful; it can generate further knowledge without additional input from outside the mind. The latter is possible because the categories or niches for ideas, etc, form a web. The way in which a category forms part of such a web determines how it relates to other categories, and in this way it gives meaning at any time. This means that unfamiliar questions can be answered, and entails more than a linguistic understanding of the question (Kochen 1983b:374). When the cognitive faculties (mind) of a person receives information, the following can happen: it could confirm existing knowledge; it could be irrelevant; and/or it could drastically change the existing knowledge.

A problem here is that it is not always information that is the initial ‘instigator’ of knowledge. It is more often percepts, sensations, experiences, and existing ideas, especially regarding personal or individual knowledge. If it is information that is acquired by a person, such information may be seen as potential knowledge, because if information is the organising element of knowledge, such information comes from an existing ‘stockpile’ of accumulated knowledge. Understanding is always mentioned in relation to knowledge, because it adds new relations among the various categories for ideas. It can lead to the revision of large sections of the existing knowledge space (Kochen 1983b:374). Knowledge is thus always limited, and never fixed in an ultimate form.

Our existing knowledge is constantly exposed to changes. Even knowledge that over time seems to have proven itself good or solid, will eventually be challenged. The object or event can never be described with certainty, because the object or event is never exactly the same from one day to the next. For example, human error remains a constant part of knowledge, even in the seemingly stable and certain world of physical science, if not specially there. Bronowsky (1973:365, 374) foresaw a view of science as a very

human form of knowledge. Importantly, he clearly indicated that speculation and argument in physics require insight and imagination as much as in any other science. Plotkin, in 1994, seemed to confirm the sciences as a special kind of human knowledge, and that human knowledge represents only one kind of a much wider knowledge. Plotkin, similar to Bronowsky, also refers to the important discovery that human knowledge is fallible and prone to error (Plotkin 1994:xvi, 4). Large stores of accumulated knowledge will not necessarily lead to better understanding, decision-making, problem-solving, or even wisdom, all of which are needed for survival and life improvement (Kochen 1983b:374).

Two longstanding approaches to knowledge in epistemology (theory of knowledge) are that of empiricists and rationalists. These relate to Kant's separation of theoretical (a priori knowledge) and practical reason (a posteriori knowledge) (Adorno 2000:79). The empirical approach represents those who think that without sensory experience there is nothing to form thoughts (ie the mind is a blank slate), and knowledge is associated with the quality of thought. A totally opposite approach is that of the rationalists who think that real knowledge is not sense-based. To the rationalist the human mind contains ideas, such as beliefs and concepts, at birth and we arrive at genuine knowledge by pure thought. We will not explore the philosophical debate on knowledge as justified true belief (the latter three concepts are part and parcel of traditional epistemology, and will sometimes be referred to). The value of the two approaches is that they, in their contradiction, expose knowledge as being reliant on experience as well as on reason.

In determining that not everything a person knows is from sense experience, it brings us to direct and indirect knowledge. Direct knowledge are the things a person perceives (sense experience), and indirect knowledge is derived from those perceptions (Brook & Stainton 2001:1-3, 16). To use Kantian concepts, even though a priori knowledge precludes experience in its independence from experience, it needs some kind of perception to obtain such knowledge (Adorno 2000:79). We need both kinds of knowledge to survive, and it is not only the survival in the particular world of the individual alone. It includes survival within a particular society. Knowledge is needed to articulate this into speech which then can be connected to the necessary action. Knowledge includes everything that is in the mind. Knowledge is cognitive and can have an

influence on behaviour – soul/mind and body/physicalness may be viewed, studied, and understood as separate entities, but they are always closely related.

The way that knowledge influences behaviour, for example patterns of error, is of a greater concern than its ultimate truth. The way in which knowledge influences behaviour can be related to Boulding's (1986:21-23) 'image', that is, the view a person holds of the universe. Knowledge is an individual's view of reality (how things seem), and this image is composed of information that enters the individual's mind through percepts. In everyday life the images one has of the world, and the picture of this in the complexity of one's mind, are continuously tested. In determining the value or truth of knowledge, we often use the criteria of depth, originality and excellence. This is to bring it as close as possible to what we perceive the so-called accurate or true world to be. It is not always possible to distinguish between how something 'seems' to be, and how things 'are'. The external world, which we cannot directly observe, is one of the main sources of our knowledge, and we therefore find it reasonable to believe in the external world, from what it seems to be alone, to be able to explain observable phenomena (Brook & Stainton 2001:16, 21).

One way of 'gathering' knowledge is thus through observation. Observation may be objective when fitting a situation, but it may also be subjective because of the way in which each individual describes a situation. This will modify and even change the initial objective observation. General rules learned through experience and in a particular group are handy for everyday living and survival, but for new and imaginative ways of 'more than survival', new situations could be approached and presented in innovative ways (Feyerabend 1988:158-161; Roszak 1986:22).

Another division of knowledge that reflects different sources/origins of knowledge, is practical knowledge and theoretical knowledge. Practical knowledge, which is known first, does not need signs or language. Sensations are the material of our knowledge. Theoretical knowledge is understanding and ideas that need signs and language to be able to reflect on the sensations and expose the relations contained in the 'material' supplied by sensations (Condillac, in Derrida 1980:45, 95-96). Practical knowledge is similar to the empiricist viewpoint, in that practical knowledge is seen as preceding

theoretical knowledge (Derrida 1980:96). An individual person is not the only knowledge source. A major source is the cumulative knowledge of a society, and an individual acquires it through social agencies. Knowledge is the creation of individuals. Menou, as quoted in Kochen (1983a:297), states that because information itself is culture sensitive, culture can be viewed as transmitted social knowledge. Social knowledge depends on personal knowledge for its existence. A large amount of personal knowledge is in turn derived from social knowledge. Knowledge in the form of public belief may be stable until that public belief is overthrown or revised through different processes. Knowledge is never stable, because each individual has his or her own unique way of receiving, interpreting, and using knowledge (Feyerabend 1988:158-161; Roszak 1986:22).

An example, or happening, of the recognition that our knowledge universe is not a strictly separable one, is as early as 1973 in the physical or natural sciences, where Bronowsky gives an account of the influences on our understanding of what knowledge is. He explained it from the point of view of physical science, where the aim has been to give an exact picture of our material world in which knowledge is certainty. In the twentieth century physics proved such an aim unattainable. Each added line or description added to the picture we 'draw' of something we encounter, strengthens or explores the picture, but does not complete or fix it. Bronowski uses the analogy of the picture to illustrate that it is the only method towards knowledge. It also indicates to us that there is no such thing as absolute knowledge, because all information is imperfect, and for something to be absolute and irrefutable, it needs to stand on something that is equally unquestionable.

It is precisely the instruments we continuously develop to observe our world, that led to the recognition that there is a paradox of knowledge. The paradox is that no matter how fine our observation instruments become, we see that our observations remain as fuzzy and uncertain as ever. This is not only so at the atomic level, but also on the scale of human beings. Human errors remain in observations, and what is important is what the errors tell us, especially because errors are bound up with the nature of knowledge. It is an area of uncertainty (Bronowsky 1973:353, 356-360). More than three decades ago, and close to the outbreak of the Second World War, a realisation was already apparent within the physical sciences that we have no certainty or final knowledge. We can never

fully separate the objects we observe from our perception of it, which is why our world is not a fixed arrangement of objects out there. We interact with an ever shifting world which yield knowledge to us, but we need to interpret it ourselves (Bronowsky 1973:364).

It seems from the above paragraphs that we can group knowledge according to two very broad conceptual categories. The first is knowledge that can either be expressed externally (given embodiment outside) and be observed by others, or it can be internalised through the senses. Knowledge that can be expressed is explicit knowledge, and knowledge which cannot be expressed is tacit knowledge. To have knowledge, someone who knows is needed, and when knowledge has not been externalised, it is lost when that someone dies. We need to indicate the relationship between knowledge and understanding here, because they are often used interchangeably. To complicate matters, the concepts of information and wisdom are usually mentioned in the same breath as knowledge and understanding. For example, knowledge may be described as information and understanding about something. Many definitions and conceptualisations tend to refer to knowledge and understanding as if they were synonyms, and indicate wisdom as their ultimate goal. Understanding is distinguished from knowledge by Kochen (1983b:374-75), by viewing understanding as leading to deeper answers regarding questions on how and why; and knowledge as know-what and know-how. This does not resolve the problem that it is understanding that determines whether percepts or information become knowledge, especially if we view knowledge as being beyond awareness. If we bring knowledge and understanding to bear on shaping our world for human ends by human means, then we have wisdom as our ultimate intellectual and scientific purpose. Wisdom includes the know-when or choice of action based on justified knowledge and understanding (Kochen 1983b:375). Knowledge comes to us through our senses and is something we have as a cognitive state. It is an awareness of something, or knowing that something is 'true'. It is not an ultimate or universal truth, but rather that which is perceived as true knowledge in a particular society or group, regardless of the ultimate validity of such a ‘truth’.

The information-knowledge processes can lead to an awareness of the universe which consists of relating perceptions of aspects of that universe into integrated patterns. Here information represents, as differing from knowledge, not yet fully assimilated perceptions.

Knowledge is a state of known relations that are expressed in a system of knowing already acquired by an individual. Returning to the external and internal characteristics of knowledge (similar to the double nature of information referred to in the section on information), new knowledge, instead of being a product of external and unaltered knowledge, is rather a result of a person's own subjective processes. New knowledge (or items thereof) can also alert the knower to previously unstated questions. New knowledge results in an awareness that we do not know everything (knowledge is never final) and important new knowledge is always needed (Kochen 1983b:375). There exists a strong viewpoint that knowledge is based on systemised, interpreted percepts which are organised to form a system with a structure of ideas or thoughts. This is strongly supported in traditional philosophy according to which knowledge connotes truth and in formal logic, validity. A good example of a formal system is science, but as Bronowsky has alerted us, even the so-called 'hard' sciences already realised in the 1970s that nothing is fixed forever. A formal system is not closed or indifferent to influences and creative impulses from outside, or from within itself. A natural science may have its main focus on natural or physical phenomena, but it is most often related back to the human context within which its research findings will create awe and admiration, and application.

The social perspective was already underscored by Belkin (1978:57) to whom science is a social activity that investigates humankind, phenomena of the human environment, and interactions with that environment, and making the gained knowledge available to the public. It is therefore social knowledge, the result of cognition upon subjective information. In this sense the term 'knowledge' is used in the same way as in the social sciences, giving it a broader context than that of truth, validity and belief in philosophy. Some conceptions of knowledge view it as a true belief, and others as an all-inclusive term of being aware of the world around us. Knowledge is an idea, abstraction, which is open-ended and constantly changing in terms of newly acquired understandings of relations among aspects of our world (Belkin 1978:57, 71; *Collins Cobuild essential English dictionary* 1988, sv 'information', 'knowledge'; Nitecki 1985:388-390).

Knowledge, which contains the world as part of its totality or whole, means that the person is changed by that knowledge, and that change represents the thing as known by that person. The human capacity to gain and impart knowledge is a type of adaptation.

Adaptations are forms of the incorporation of the world into the structure and organisation of living things. Knowledge, or the knowledge universe is, for example, the 'scheme' used to organise information storage in a way that permits the system to apply that information in unforeseen situations (Penzias 1989:146; Plotkin 1994:ix, xiv-xv). Our knowledge universe includes many kinds of knowledge ranging from biology to psychology, and not all of these knowledges pertains specifically to human beings at all. Yet, knowledge remains a human construct, even if the origin of certain obtained knowledge is non-human, or experimental.

In a sense ‘originating’ knowledge predates information (the latter being dependent for its success on the invention of writing and printing, and the information technology revolution), as percepts predate data (the latter being human-made). This can be related to a person who comes to have knowledge of something, and the brain-state that represents that something is a particular form of organisation that bears a relationship to a feature of the world. Knowledge denotes a cognitive state that bears a significant relationship to some feature of the world. Knowledge also exists about things that do not exist in the material world, but in our imagination or dreams. The latter is not allowed for in either the empirical or the rational approach to attaining knowledge. Knowledge can be gained through the experiences of others, and this sharing results in cultural knowledge, as we shall refer to again in the chapter on the information society.

Knowledge, and the relation between language and reality, were thought of as based on cause-and-effect relations (causation is the regular succession of events and the determination of one event by another). What we do is determined by how we take the world to be, and this is not always how the world is. The thoughts which determine behaviour are representational of how one sees the world to be. It is how things are represented in thought, not just what they represent. We do certain things because we thought it to be or represent something (Crane 1995:61-62, 67-68; Plotkin 1994:xv-xvi, 3-4, 10-11). The chapter on relations with others and the world will attend more closely to existence and being.

The above paragraphs are all two-part approaches to knowledge, and we need to relate them to each other to be able to avoid the continuation of their rigid separation. Using another division, aesthetics and calculus are used to show how the many characteristics of knowledge are related, and still remain unique and functional entities so necessary in the sciences (social, human, natural). A slight digression is in order to illustrate another point. If information is understood in the same way as by modern information technologies, information becomes calculus-dependent. The important human potentials we already referred to are reduced when systems offering calculi are used widely without taking their restrictions into consideration (Wersig 1990:194). This is accentuated by the use of data, fitted for specific calculi such as measurement, that is not properly understood or used appropriately outside the calculus. The reason for referring to information here, is that this makes it clear that ‘information’ does not necessarily mean ‘knowledge’. This is especially important in light of tendencies in computer circles which are already using phrases such as “knowledge-based-systems” (Wersig 1990:194). This excludes a whole domain of knowledge from such systems, as they only reflect human knowledge.

Knowledge has a much broader competence as it is everything the human being stores for future help in actions. We have determined that knowledge is complex. It cannot be simplified without the risk of ignoring some of its characteristics. These characteristics stand in relation to, and represents, the potentials and uniqueness of humans. These potentials are our link to calculus and aesthetics as the broader characteristics according to which knowledge can be conceptualised. An important aspect of knowledge which also links them is that knowledge consists of extreme components, such as experience, generalisations, secondary experiences, clauses, skills, and evaluations (Wersig 1990:194). The discussion on the two main characteristics are done separately for clarity, and will be related to the potentials of humans.

1.3.1 Aesthetics

The aesthetic potentials of humans mentioned here are but a small representation of what can be included. Examples are phantasy, playing, illusion; inconsistencies, mysteries; emotions, beauty, ugliness; envy, sympathy; confidence, self-consciousness;

likings, sadness. Traces of myths, magic, rites, idols and religious beliefs are found in this group, because we inherited it from our historical development (Wersig 1990:190-191). Aesthetics can be referred to as personal knowledge, softer knowledge, or pure intuition (Weizenbaum 1984:277, 279). According to Wersig (1990:196-197) there are specific potentials that must be stressed more to provide more knowledge for humans. These are *images* (the presentation mode in which aspects of both the rational/calculus and the aesthetics are combined naturally; the trivialised image needs to be revitalised); *language* (largest store of knowledge for aesthetics and calculus are still natural language, reverse technological reduction of language to 'texts' or databases by rediscovering the magic of language in interpretation, analogues, etc); *objects* (neglected form of knowledge, sharpen our senses for aesthetical dimensions of knowledge); *story telling* (provide specific form of knowledge, world interpretation, interaction of world objects); *personal knowledge* (purest version of knowledge, fixed to a person, use persons as knowledge sources, sharing even in virtual spaces); and *staging of information* (information services are boring, knowledge potential seldom tapped, need relation of knowledge to time and space, stories and people, senses and the whole being, knowledge on stage as integrated communication offer).

Everything is interrelated with everything in the complex of knowledge. Knowledge can therefore never be divided into isolated elements. If the elements of knowledge are isolated, the relation that knowledge has to those elements is lost. This brings us to the second main aspect of knowledge, that is calculus.

1.3.2 Calculus

This domain is also referred to by Weizenbaum (1984:277, 279, 280) as scientific or harder knowledge, calculating reason, and instrumental reason. The human potentials we deal with in calculus is control; empirical evidence (logical consistency, laws, empirical truth); rational behaviours; machines (Wersig 1990:190-191). A typical approach to a problem in this group is the consideration of options to solve it, which type of calculus to use in its evaluation, and the ideal is that the calculus resolves the problem. Even if it needs a supplementation due to failure, aesthetics is excluded or transformed into an

element of calculus, and data is selected from the appropriate set of calculi (Wersig 1990:191-192).

Positivism also belongs to calculus in its use of general laws to make valid explanations. Such explanations must be compatible with general empirical laws. Positivism seeks laws beyond the immediately observable. The theories it expresses become the basis of hypotheses that will be tested against empirical evidence. These laws and theories provide the language within which its natural laws can be expressed (Radford 1992:410-411). It employs both the empirical and rational approaches to knowledge.

The relationship between calculus and aesthetics can be seen in the characteristic of knowledge as something that humans consider trustworthy and relevant. Humans use it to organise their interaction with their environment. Here knowledge appears as analysis, synthesis, or clauses. It also includes the following kinds of knowledges typically associated with aesthetics: mythical knowledge, magical, ideological, of social norms, aesthetics, and negative. Knowledge not only offers an explanation of the world, but an interpretation of it. It is knowledge about the world, as well as a construction of that world. It is simultaneously calculus and aesthetics. The challenge is to re-introduce some aesthetic potentials (as referred to) that are lost in our technological dominant world (Wersig 1990:195-196). For the purpose of this study, whenever the concept ‘knowledge’ is indicated, it includes the aesthetics and the calculus, unless indicated otherwise.

1.4 The relationship between information and knowledge

The relationship between information and knowledge is complicated by the way the literature often uses the terms interchangeably, using them to describe the same things. Also complicating a discussion on the relationship between information and knowledge is the lack of agreement on what information and knowledge is. Yet another limit is that the linear approach to data-information-knowledge still dominates in spite of indications to the contrary. For example, Mizrachi (1998:181) writes about the abandoning of the linear notion of these concepts in favour of an undifferentiated or complicated circular information ecology. Information and knowledge form part of the same knowledge universe. This knowledge universe is at present split up into various knowledge layers

and fragments, including connections between them. In such a universe according to Wersig 1997:225), information may provide order and orientation by developing ordering structures for such an ambivalent universe. We already referred to information as an indicator of the amount of complexity that needs to be reduced for action. The following is an indication of approaches to the relationship.

Dictionaries connect information to knowledge in definitions of information: "... *to know something about something*" (*Collins Cobuild ...* 1988, sv 'information'); and "... *knowledge gained or given; facts; news; ... the communicating or receiving of knowledge* ... " (*Chambers 21st Century dictionary* 1996, sv 'information'). Views on information and knowledge vary from them being mutually exclusive to them being totally interchangeable and even indistinguishable. Information, characterised as different from knowledge, exists outside the mind, making information more public than private, whereas knowledge exists on both levels. Information has a continued existence in memories and in concrete records, and knowledge is seen as more fleeting if not recorded. Such a distinction can be seen as meaning that information is always in some or other concrete form (eg book), whereas knowledge exists independent of whether it has been committed to paper or to memory alone. This can be related to Farradane's (Belkin 1978:78) suggestion that information is a representation of internal knowledge or thought.

Knowledge needs the physical form of information to be able to commit itself to a permanent form. The physical object is the only external element which is a representation of what is to be communicated, and that is information. Data can be seen as the essential components of information, and therefore data relates information to knowledge. Regarding knowledge, data is only of importance if that knowledge needs to be represented in a physical form, since data is central to information. As a process, this relationship implies that knowledge is considered a more developed form of information (hierarchical relationship). "[T]*o know something about something*" (*Collins Cobuild* ... 1988, sv 'information') can also be stated as "*information is knowledge of facts*" (Nitecki 1985:390). Information and knowledge are sometimes a continuum. What we know can be expressed in speech, in writing or acting, in such a way that others can deduce this knowledge from the selected behaviour. Something that can be observed through the senses (empirical), can be understood by giving meaning to it, and then it can be converted into knowledge. Or, it is successfully communicated information via the

senses. Or, we can differentiate clearly between information and knowledge, by claiming that we acquire information by being told, and acquire knowledge by thinking (Belkin 1978:78-79; Nitecki 1985:390; Roszak 1986:93).

Information and knowledge are not always such a continuum, especially since knowledge is not only fixed, but also in a state of flux. There is always information that never informs in order to become knowledge, for example knowledge externalised in the form of a book that is never read. Machlup (Nitecki 1985:391) indicated that knowledge and information, when considered as parts of a content, are synonyms. But, when information represents a process, and knowledge a content of that process, then they are seen as antonyms. Information is related to knowledge in the sense that it is always a part of the total relations known. Information and knowledge both form part of an interrelationship among 'new' information, and static (existing) knowledge (Nitecki 1985:390-391). Such existing knowledge is most often in a recorded form, and is called the most concrete type of information available, and it has the potential to inform people, and therefore the potential to change their image of reality. If information is viewed as explicit knowledge (that is, externalised), then information cannot be lost. If we go beyond awareness, we have knowledge – applying what we understand to analysing situations and ideas, and drawing one's own conclusions. (Debons *et al* 1988:1-3; Frankl 1990:22).

To be able to 'become', or lead to, knowledge, information needs to have meaning even if that meaning is never fixed and often multiple. If information is, according to Wersig, knowledge in action, then it needs to have meaning.

1.5 Meaningful information

The discussion on information and knowledge shows us that whenever 'meaningful information' is referred to, we are always considering knowledge. To be able to distinguish meaningful information from meaningless, irrelevant information, we need knowledge. Information without meaning cannot be or become or influence knowledge, except for knowing that it is meaningless. Knowledge and meaningful information are crucial factors in adaptation, understanding, interpretation, application, thoughts, ideas, growth, more knowledge, that is, in every aspect of human life. The first aspect of the main theme is approached in this paragraph first according to what “configuration”

entails, and then secondly what “meaning” is about.

We need to determine what configuration is in the context of meaningful information. Formally, configuration ('to form or fashion' – *Chambers 21st Century ...*1996, sv 'configuration') is as follows: the external shape, and its characteristics, is determined, fashioned or formed by the positioning and distribution of its parts relative to each other; thus, to be formed or fashioned according to its parts. The shape, or outline, though, should be viewed as a shifting boundary which always adapts according to its internal parts. The internal parts are also influenced and moved by external matters, if the context changes the internal parts cannot remain unaffected. An example is fault-lines of which the characteristics are fertility, adaptiveness, creativity, challenges. The equation could read: meaningful information equals knowledge for action. Knowledge can be transformed into action once a theory has been given meaning through its application, whether as a physical system or as an action leading to further study of a phenomenon.

Before we can consider how to configure meaningful information, it is necessary to understand where meaning comes from, why or when it 'happens', or even whether it existed before our cognition of it. It includes everything that may influence meaning, bring it about, or lay it bare. “*[M]eaning does not magically spring out* ... “ (Brouwer, in Tasić 2001:48) from somewhere or something, and we will see this when we consider what 'meaning' is. The meaning of a concept can be what is understood by it, and what it refers to or expresses, that is, the intended thought or idea, having a purpose. It can also be someone's perception or interpretation of information received (*Chamber's 21st century* ... 1996, sv 'meaning', 'understanding'; *Collins Cobuild* ... 1988, sv 'meaning'). Some of the concepts that are used interchangeably with 'meaning' are signification, sense, message conveyed, idea, denotation, essence, spirit, contents, semantic content, context, value. “Meaningful' is used similar to comprehensible, intelligible, telling, clear, unambiguous, declaratory, explicit (*Bartlett's Roget's Thesaurus* 1996, sv 'meaning'; 'meaningful').

'Meaning' is often approached as something that can be acquired through a learning process, as an entity learnt separately. Yet meaning is about more than learning, because a concept and its meaning for example, are not two things we acquire when learning the concept. Learning its meaning is learning more than pronunciation and spelling. In learning the meaning of a concept we are able to conduct with it, when we choose to, many informative and calculative, recorded transactions. A concept is always more than a noise and something else. It is rather, a complexly qualified noise, endowed with a specific saying-power. A concept can be seen as a semi-institutional enabling instrument in the sense that we have learned how to use and interpret it. The institutional aspect of meaning depends on, and encourages, conventional meanings of concepts (that which is generally understood by it). From conventional meanings, more subjective meanings are created when it is associated with a private experience of which the meaning differs from the conventional meaning, and original subjective meanings may influence the conventional meanings.

To be able to ensure the successful conveyance of information it is necessary to have agreement on the meanings of concepts, whether between individuals or amongst members of a group. This applies even if no unanimous agreement, on what exactly is understood, exists (Belkin 1978:68, 71-72; Crane 1995:141, 171; Frankl 1990:25, 55; Ryle 1979:88). An example of institutionalised conventional meaning, is formal learning, in the formative structures of understanding of the formal education system. It is in such a system where we 'learn' to structure our reality according to dominant intellectual traditions. One should always remain aware of such intellectual ethnocentrism (Bourdieu 1992:40) to be able to avoid using valuable time making classifications and advancing certain theories at the cost of other, equally important, structures of thought. This is why there should be an awareness of the determinisms of thought to understand the processes that led to particular theories or paradigms being dominant. The importance of the latter is expressed in the chapters regarding information science.

Meaning finds expression via language, and a later chapter pays closer attention to language. Reference to it in this section is necessary because it is an integral part of meaning, whether we consider language in its different forms, such as spoken language, written, gesture, symbols, images. The semantic features for instance, of concepts and

sentences are those that relate to their meaning. A theory of meaning for language is called a semantic theory; and semantics is the part of linguistics which deals with the systematic study of meaning. Symbols have semantic features and they stand for things. Semantics is about the way concepts relate to the world, as well as to one another. Symbols in the mind for example, can also have semantic features since symbols represent things in the world. A symbol represents both concepts and urges or feelings made recognisable in images. Emotions and ideas that are subjectively experienced, find visual representation in symbols. Writing and sculpture are examples of the externalisation of these symbolic images. It is through cultural symbols that members of a community are able to share their emotional experiences.

An important characteristic of meaning is that, once we understand the meaning of a concept, we will continue to understand it in any sentence or context it may appear. Data for instance, can have different meanings, depending on the order in which the data is presented. Sequence can also cause a sentence or sentences to describe different events. How we interpret the sentence or text is another matter as it is influenced by experience, memory, insight, linguistic abilities and so on (Belkin 1978:68-72; Crane 1995:139-140; Frankl 1990:25,55). These latter influences form part of our existing knowledge as well as our ability to create new knowledge. The differences in language usage, for example, can be approached as not being in conflict, but rather representative of where meaning can be found or constructed and playing a decisive role in whether particular information will be meaningful. What also plays a role in how an observer will react to or interpret information, is that the meaning of concepts create different worlds for different people.

Concepts and their meaning are inseparable from social, historical, cultural, and contextual associations. It is also about the way it expresses our realities as change continuously affects spatial, temporal and reality perceptions, and new social interactions. An example of this is the accentuation of collective intelligence which is made possible through vast electronic networks. Movement of ideas is nomadic because cyberspace for example, is not hindered by traditional territories or boundaries, and users are no longer passive but active players. This is why linear guidelines on its own is not flexible enough, and these developments affect meaning. Human beings are affected by that which is

outside (object) them (subject), and cyberspace is no exception. The meaning of information thus remains flexible (De Beer 1994:78-81; De Beer 1998a:96-103; De Beer 1998b:91-93).

The previous paragraph shows how language structures and usage vary in its meaning, interpretation, and understanding. This is further complicated by the communication channels, and for whom it holds meaning. These complications are not controllable or linear in appearance, and are also influenced by how humans experience time, space and reality. What could be deducted, then, is that the object cannot be separated from its context without a loss of meaning and understanding of the complex reality it shapes and fits into. This is related to the separation between form (the physical structure of symbols) and its meaning (what it stands for), which was needed for a computational approach to become possible (eg Shannon's model that was referred to). Such a model cannot address cognitive phenomena, such as language and interpretation, at a deeper level. In contemporary society the disappearance of the form / meaning distinction at a symbolic level, and its reappearance in the connecting of meaning to the overall performance (eg learning, recognition) seem to become dominant. Now it is the observer who provides the correspondence between the global state of the system and the world it supposedly handles (or its representations). (Bronowsky 1973:353; De Beer 1994:70-88; De Beer 1996a:68-80; De Beer 1998b:75-82; Varela 1992:247).

Communication has a strong influence on meaningful information. Using a speaker and a listener as examples, we cannot escape the fact that the listener uses categories of thought (a concept often used synonymously with that of meaning) to listen to and understand the intended ideas (ideas also used synonymously with meaning) of the speaker. These categories of thought are situated in a context different from the context of the discourse offered by the speaker. The closer the two categories of listener and speaker are, the more adequate the understanding, as well as the presentation (De Beer 1994:78-81; De Beer 1998a:96-103; De Beer 1998b:91-93).

The above examples are part of the study of information, and the key concern of any study of information is meaning. The challenge lies in the configuration of meaningful information out of a mass of meaningless and overwhelming information available.

Access to masses of information is almost instantaneous and space and time seems no longer to offer constraints. It is meaningless to access and retrieve information that is not applicable, enriching or enlightening. Yet it is offered to us daily in various guises. The inherent value of information cannot be assumed as it may be of value in one situation, and totally useless and meaningless in another (whether for a human being or a machine). Meaning can be found through, and be influenced by, factors such as language, context / environment, aesthetics, value / ethics, interpretation, social practice, action, discovery and inventiveness. These factors have implications for configuring meaningful information. Such a configuration is important because it is not about the discovery of one absolute truth, but a search for meaningful information.

Only meaningful information can truly re-empower society. Applying information with appropriate meaning is indicative of the interactive relationship between science and society. Language, context, and ideology all have an influence on the way knowledge is translated into action. Also of importance is the realisation that the linear and the rational should not limit richer enquiries into understanding and wisdom, but enhance and encourage it through an interdisciplinary approach in a science such as information science. The main aim of configuring meaningful information is to overcome the paradox, as identified by Dupuy (1980), that we may have "*more and more information*", but that it is with "*less and less meaning*" (Dupuy 1980:10-11).

1.6 Conclusion

The aim here was to provide background on meaningful information and why it is necessary to understand the challenges created by its configuration in information science. We need to take into consideration how desired information is influenced and determined by ideology and personal preference (also referred to as underlying personal philosophies). Information without meaning is useless and more information does not guarantee more meaning. To be able to configure meaningful information, we need a *transformation* and not a mere shift in our way of thinking about information and the importance of knowledge. In such a transformation it is necessary to pay attention to nontraditional concepts in information science such as aesthetics and unreason, to be able to contribute to the configuration of meaningful information. An overload of

information may or may not be able to contribute to the forming of a knowledge base of meaningful information.

The role of knowledge has long since gone beyond documentation and representation within disciplines such as information science. As individuals, societies, and technologies evolve, so do the structures of application and thought. The changes in these structures are not always brought into focus with the changed needs and attitudes of individuals, societies, and technologies (De Beer 1998b:90-91; Foucault 1981:31-34; Wersig 1993:230-233). This is something we will try to address in the relationship between knowledge and action. Having mentioned society and technologies, the next chapter specifically deals with the milieu within which meaningful information needs to take place. No matter how the milieu changed and will change, and whether we call it a postindustrial or postmodern or post-postmodern or information society, meaningful information remains our key concern. We will call the contemporary milieu ‘information society’ which will allow us to identify changing characteristics or approaches within it such as modernism, postmodernism, and so on.

CHAPTER 2
INFORMATION SOCIETY AS MILIEU OF MEANINGFUL INFORMATION

2.1 Introduction

In this chapter the information society is approached according to the origins of the idea of an information society, its strong affinity to information theory and technology, and the ambiguities and myths surrounding its promises and existence. We focus on Dupuy's paradox that in spite of having more access to information than ever before, we seem to have increasingly less meaning. If the reason for calling ourselves an information society is based on the presence or availability of vast amounts of information, then what are we to be called if the majority of that information is meaningless and useless? And how much does our understanding of the information society have to do with humans, and not only information technology?

2.2 The idea of an information society

Dominant in discussions regarding the information society, is a definite link to information theory and the consequent rise of information technology and the later powerful convergence of information and communication technologies (ICTs). There seems to be two parallel developments on the idea or concept of an information society. The stronger, or better advertised concept, is an 'Information Society' as part of a planned future vision, something that will ultimately culminate in a Global Information Society. Such a vision has a strong technological focus driven by economic and political forces, where the success of the visible technological device is celebrated. The second concept is the gradual, historical development into an information society due to a changing world and world view. Even though such a society has as a strong impetus the progress in information technology, it recognises the impact the new technologies have on social, cultural, psychological, and emotional factors. This second idea of an information society also re-examines matters such as community and responsibility. These two approaches do not take place separately, because the technology leading to the growth of such a society, will in time itself be influenced by the very society it helped bring about.
A third related division can be added, and that is the two broad approaches in

postmodernism to the information society. The first approach centres information and information society in economic terms, occupational shifts, or the flow of information across time and space, especially in terms of information technology (Webster 2002:227). Such an approach effortlessly isolates and translates human concerns, as well as information, into controllable quantitative units (as we shall see later in Shannon's information theory). The American development of Post-Modernism in architecture, for example, was strongly criticised for its repackaging of culture as a commodity, and a controlled electronic representation of reality. This made Post-Modernism especially vulnerable to being copied and commercially debased (Steele 2001:182, 198).

The second approach places emphasis on the significance of information in terms of the spread of symbols and signs. It does not isolate human matters, because its concern lies with the expansive growth and infiltrating presence of all forms of media. We are surrounded in our contemporary world by a mass of signs and symbols, reflecting particular qualities and features of our everyday life (Webster 2002:227). Post-Modernism in Europe is indebted to the influence of the French philosopher Jean-François Lyotard (Steele 2001:182) regarding language and semiotics. He saw the move of societies into a new age as resulting in the status of knowledge being altered. It also led to a diversification of cultural influences and a move away from unity in Modernism. Post-Modernism, in contrast to Modernism, did believe that reality was representable and this was strongly emphasised by developments in photography. Post-Modernism also returned to the centrality of the exploration of context and history, making many of their projects eclectic in style. An example is British architect John Outram (Steele 2001:190), who was interested in returning architecture to its origins as a system of signs that the public can ‘read’. This is similar to the use of imagery in and on buildings in past societies such as Greek architecture. In the latter, decoration was superimposed on the underlying structure for carrying specific meanings. Architecture, then, has become a communication medium, a semiotic structure (Steele 2001:185-191).

We find the same ambiguity and separation in the origin of 'technology' as a word, in the Greek word *techne*. *Techne* means “craft, skill, cunning, art, or device” (Talbott 2001). Here technology is taken to include both an objective construction or a subjective capacity. Information society as an idea, is approached either as an expression of the

external devices of *techne*, or as the living *techne* of our consciousness (Talbott 2001). The separation between these two meanings of technology can be seen in the many different opinions on what an information society is, or ought to be. It is imperative to bring these meanings together again, especially since the objects we create are strong expressions of their intellectual growth and empowerment. Such a reunion is important if we are to ensure that an information society is not seen and approached as merely a computer society. There are other ambiguities (such as the text being separated from the context, while at the same time a blurring or breaking down of distinctions between interior and exterior, subject and object, etc, is taking place) that we will attend to as the discussion continues. We shall see in the next few paragraphs that there are different views on what this 'new' kind of society is or will be based on, varying from services to the flow of information and societal expressions.

2.2.1 A new kind of society in the information age

An information society is not merely a society that is aware of the importance of fast access to information, even though it does not always have the information. In an ideal information society the convenience of quick access and delivery is an everyday occurrence (Duff 2002:139). We can determine from this that it is not the information that is unique to what we call the information age, but how information has become central in all spheres of life. The ability and process of acquiring information, systematically organising it into knowledge frameworks, and passing it on to our descendants, has always been crucial to humankind's survival. This process also enabled humans to control the natural environment and improve material wealth, most often at the cost of the natural environment. The idea of an information society seems to have developed out of a shift occurring in the occupational structures of mainly industrialised countries. This shift became apparent due to the growth of a section within the tertiary sector of services, that did not add directly to the gross national product and was viewed as non-productive. These occupations included policemen, clerks, teachers, in fact quite a broad range of anyone concerned with the processing of information (Wersig 1990:185).

The question is whether we can speak of an information society if its parameters are so broad as to include all those workers involved in the information sector, even when these workers do not share professional interests, similar education and experience, or standards. They do not fall within the same profession or discipline (Kochen 1983a:280). In such a context, an information society is simply where less human power is applied to material production and more on immaterial needs and the processing of information (Wersig 1990:185). The threat held by labour-displacing technologies, and the possibility of differences in lifestyle, form part of societal changes we need to be aware of. This is especially true as more varied institutions (political, social, economic, and educational) are increasingly dependent on, and involved in the production of information (Kochen 1983a:277).

Contemporary society, therefore, shares with pre-industrial and industrial societies the possession of knowledge and the ability to use information to influence and manipulate the environment. One kind of society, eg postindustrial society, does not have to end for another, eg the information society, to begin. They overlap and the characteristics of the one will necessarily appear and continue in the other. We can distinguish contemporary society from previous kinds of society in the sense that high technology enjoys prominence, extreme industrialisation, and the application of electronic technology to most aspects of our lives. Especially the merging of information and communication technologies (telematics) led to a phenomenal increase in information processing power, as well as a growing demand for public information services. The key feature in all these activities is information and information-using activities. Information is approached as a dynamic resource in itself, instead of a passive tool for carrying out activities. The creative talent of individuals and their ability to use information for innovation are emphasised (Kochen 1983a:279; Shillinglaw & Thomas 1988:9-10; Wersig 1990:185-186). Even though it is the centrality of information that is unique in contemporary society, it is strongly promoted as being a 'new' kind of phenomenon in its own right, existing as a physical entity in spite of our awareness of its ephemeral and intangible characteristics.

The concept of an information society continuously changes, and the concept is overworked and abused, according to Kochen (1983a:280). It has become a society

strongly based on information and communication technologies, and the process is informatisation. One implication for such a society based on information and communication technologies is the availability of more information to more people. In this sense we could call it not only an information technology society, but an information usage or information-minded society. Just because we have more information does not, of course, imply that we will make better or different use of it (Wersig 1990:186).

We need to consider the position and status of the information society, and whether we can trust it to be an information society (that which we expected an information society to be, its promises and the ideologies behind it). According to Curras (1987) for example, it is misleading to refer to an information age, as information has always been around. Curras finds the name 'information technology age' more appropriate. In such an age communication is seen as crucial to survival, and the proponents of information technologies have an obsession with techniques for processing, storing, reproducing, and transmitting information, independent from its meaning content (Curras 1987:149-151; Swerdlow 1995:5).

2.2.2 Information theory and information technology

Even though we constantly refer to information technology, it is focused on in this paragraph. The reason is that it forms part of any discussion on the information theory of Claude Shannon. Shannon is seen as the pioneer of the information age as we know it. It was his quantification of the concept 'information' and the extreme step of defining information independent of meaning, that opened up the way for a new technology, as well as a reassessment of contemporary society. One effect this had, is that we cannot refer to the information society, without recognising its close association with information technology and its phenomenal success. Accentuating this fact, is that his influence reached beyond science and engineering by shaping our world. Quite recently prominent scientists have started to successfully re-examine and even challenge the foundations and underlying dogmas of Shannon's theory. Our world has changed so drastically, and our information technology has 'matured' to such an extent since its original inception, that we cannot accept a model anymore that requires a transmission certainty and reliability of a hundred percent (Hayles 1987:25; Von Baeyer 2003:215, 218).

Shannon's “A Mathematical Theory of Information” of 1948 (Hayles 1987:34), and his “A Mathematical Theory of Communication” (Capurro & Hjørland 2003:343) had a profound effect on the scientific community of the time. He was able to quantify 'information' by defining it as a “function of probability” (Hayles 1987:24), thereby having nothing to do with meaning. Warren Weaver (Hayles 1987:25), who was responsible for the interpretation of Shannon's theory, saw the separation of information and meaning as the price we have to pay if humans wanted to “subdue the information channel” for it to be able to process information without having to fret over its meaning (Hayles 1987:25). Shannon effectively removed information from its external relation to the context that provides information with meaning. The irony of this decontextualisation may be that in separating text from context, or information from meaning, a new kind of informational context is created. Context is not a given anymore, but something that can be predetermined or created at will and for various purposes.

There were attempts before Shannon's theory at decontextualisation, especially in literary studies, but Shannon's information theory not only transforms the content of the cultural context, but how context itself is constituted. Now it is possible to accomplish the latter through a technology capable of fragmentation, manipulation and the reconstitution of information texts as it pleases. It is in postmodernism that we find recognition of such an arbitrary context as our context, that is, the context of the information society (Hayles 1987:25-26). This separation of text from context is one of many ambiguities to come. For instance, decontextualisation not only effected a separation, but also, because of the separation, caused differences to break down.

The boundaries of differences have become sufficiently blurred due to the possibility of manipulating and creating contexts at will. It also led to heated debates as the definition of information separated from meaning (or text from context) was contested right from the beginning. We cannot ignore the fact that without separating text from context, information technology as we know it would not have been possible. According to Hayles (1987:27) these physical enactments of decontextualisation had an almost immediate impact on cultural values, such as birth control, military manoeuvres, etc. The benefit of hindsight seems to confirm that we cannot present, or represent, everything we can conceive, as it will remain inadequate or mutilated, especially in economic and political

terms. We can only perceive that which is unpresentable through writing. The possibility of a stable universal context for texts has disappeared and itself becomes the context for postmodern culture. This renders universal or global contexts nonexistent, and makes only localised contexts possible (Hayles 1987:27-28). If this is so, then the possibilities of a 'global', transparent information society may become undesirable, if not impossible. Despite this, the aspirations of the idea of an information society remain global, and could in economic terms, ultimately lead to a single global economy or Global Information Infrastructure (Dick 2000:46-47).

2.2.3 A postmodern approach to information and society

Postmodernism, because its main thinkers were forceful in their insistence that postmodernity is a complete and decisive break with the past, makes us acutely aware of certain doubts. These doubts are whether we are truly entering a novel information society, and that a new age has arrived or not. This is in a way similar to modernity which not only broke away from classical culture (leading to Impressionism, Surrealism, Dadaism, etc), but also brought about the end of feudal and agricultural societies. It was not a sudden end, though. Postmodernism, on the other hand, claims in general a complete 'fracture' or break from the thinking styles and activities which reigned supreme for centuries. This rejection or denouncement of modernist ways of seeing unites postmodernism as an intellectual movement and postmodernism as something that we encounter in our everyday lives (Webster 2002:227-228).

The modern and postmodern movements are important because both are efforts to move away from models specifically aimed at representation. Modernism and postmodernism are a refusal of representational culture, but postmodernism did not view reality as being unrepresentable (as we see in Post-Modernism[2] in architecture). Another aspect that binds the histories of modernism and postmodernism, is that talk of an information society started to feature strongly in the industrial period when information became a

[2] 'Post-Modernism' as an architectural style or movement is written according to an architectural source (Steele 2001), and should be distinguished from 'postmodernity' and 'postmodernism' as a thinking style, philosophy or cultural approach, even though influences on both are similar. The same applies to 'Deconstructivism' in architecture, and Derrida's philosophy of 'deconstruction'.

crucial element. Postmodernism is all about the dominance of informational aspects in contemporary society, albeit in a different sense. Within postmodernism itself we detect seemingly opposing movements or approaches (Webster 2002:229). Postmodern studies, according to Fuery and Mansfield (2000:xiii), resulted partly because of the recognition that changes in communication and information technology cannot be explained by using only inherited models of enquiry. We live in a world that is different from what has gone before, and brings into question whether the tenets of social explanation are still valid.

This rejection by certain postmodern thinkers of an approach that tries to explain the present utilisation of the conventions of the established social sciences, is counterbalanced by those postmodern thinkers who approach it as a condition which is the outcome of social and economic changes that can be investigated by established social analysis. This latter group does not perceive the differences as reason enough to suggest a complete break or fracture from the modernist movement that gave rise to the Enlightenment, but rather a continuation of changes and developments. An information society in a postmodern age represents a conception of reality that still contains strong elements of modern approaches (Webster 2002:228).

A broader field of investigation of practices is important as it is the material for an investigation of the broad construction of meanings and truths. This includes their social and political interconnections. The major aspects of modernism that postmodernism opposes most vehemently are claims that it is possible to identify rationalities underlying social development, behaviour, action and change. Postmodern thinkers also deny the possibility to offer totalising explanations (grand narratives), as well as being able to identify the main origins of developments, for example of civilization, capitalism, etc (Webster 2002:229-230). In an age of so many differences, opposites, possibilities, and powers, these larger claims of identifying underlying explanations, even if it does reflect the originators' bias (luckily perhaps), still offers an inkling of an idea how things may or may not fit together. It offers a historical context, whether local or global, and brings together the chaotic and the ordered of a society.

Postmodernism is often conceived narrowly as being mainly concerned with the cultural arena (art, aesthetics, music, architecture, movies, etc) (Webster 2002:229-231). It is a notion or conception of postmodernism that is not acceptable. Those who contribute to the debate on postmodernism, even though they do focus upon cultural phenomena, seldom if ever limit themselves to that alone. Our contemporary world necessitates, more than ever before, the realisation of the much greater significance of the cultural. Perhaps in a cultural sense, postmodernism is a break from modernism, even if only the visible convinces us. The narrower discussions on fashions and architecture have long since moved on to a “critique of all expressions of modernity in so far as they claim to represent some 'reality' behind their symbolic form” (Webster 2002:229). Indirectly in this quote, maybe unintentionally, postmodernism accuses modernism of representation, the very thing that links these two movements in their opposition to it.

In the humanities of the last forty odd years, an investment has been made in the belief that human behaviour is either determined or mediated by the collective history of human practices. This removes or obscures the existence of a dividing line between the natural and cultural, the true and the artificial, the authentic and the educated, that can be used by human beings to measure their activity. These inherited divisions are themselves acts of culture and can only be meaningful in the context of the methods groups use to produce and validate truth (Fuery & Mansfield 2000:xix-xx). Jacques Derrida criticised such binary oppositions which are used to classify and organise the objects, events and relations of the world. Derrida uses undecidables (eg the zombie) to disrupt this oppositional logic, and places the focus on the 'between' of the opposites. This example emphasises that it is vital to be aware of the limits of order (ie stable, clear and permanent categories). It does not imply that order becomes unimportant. He does not reject the existence of certain necessary divisions. One could rather argue that for order or disorder to exist, it needs its apparent opposite, therefore including the importance of contradictions and differences (Collins & Mayblin 2000:17-24).

Cultural theorists, for example, argue that even 'unsocialised' (that which is perceived as outside, strange, of no direct interest, or detrimental to a particular culture) parts of human experience cannot be expressed without being subject to the means and structures of cultural mediation. The language used to write or speak these experiences,

is weighed down with implications, associations and dynamics that individual language users cannot control. More often than not language users are not even aware of these implications and influences. To quote Fuery and Mansfield (2000:xx): " ... *the outside of culture can only be imagined as the possible space from which we cannot speak*." The reality of this 'outside' to culture can be asserted only from within the culture it is designed to delimit. This seems to imply that non-cultural (that which is external or strange to a particular culture) influences on human beings do exist, but that these influences are mediated or intercepted by cultural forms. This also implies that the use of rigorous analysis on truth-claims will not lead to an understanding of the formulation of truth.

An alternative seems to be by problematising the methods and means by which truth is generated and communicated (Fuery & Mansfield 2000:xx-xxi). If we return to the first approach to an information society as a planned 'future' that is especially information technology driven, we find that postmodernism for this very reason reject the totalising explanations which, through its demonstration of the truth of developments, reveal how partial such explanations are. Implicit for the modernists in the recommendations made by such an approach, is that it recommends a particular direction that social change ought to follow, by stating that it is 'likely' to take such and such directions. It comes across as deliberate planning and organising of the present and future, but often the claims are refuted by the course that history followed. The pretensions of the social sciences, that it can amass accurate information about the behaviours of people, are rejected (Webster 2002:230-231). In the paragraph on the ambiguities and myths of the information society, or rather the promises foretold, we will come across many of these discredited 'prophesies'.

2.3 The ambiguities and myths of the information society

There are many who prefer concepts other than 'information society' to refer to the post-industrial shifts and changes taking place in contemporary society, especially due to the fact that there is very little consensus on the definition of 'information' itself, as we have encountered in the chapter on information and knowledge. Also, when referring to an information society different meanings and usages are attached to it depending on who,

for example, a sociologist, economist, politician, psychologist, information scientist, is involved. Those commenting on these evolutions of society closer to its inception, use the concept of a 'post-industrial society' more strongly. Kochen (1983a) refers to a few alternative forms of information society. Examples are Zeleny and Skolka (in Kochen 1983a:280) who envisioned a 'self-service society' developing, as opposed to Bell's (Kochen 1983a:279) depiction of a post-industrial society. In such a self-service society most economic activities are based on self-service, for example knowledge products are manufactured to support self-service. In such a society the main focus is ecological balance, and deemed more important than the use of high technology, power, and material prosperity. The ideal postulated here is smaller, self-supporting units as opposed to large, complex societal systems. The benefit of such small and decentralised units is the avoidance of depersonalised individuals (Kochen 1983a:279-280).

Artandi (Kochen 1983a:280), on the other hand, views a post-industrial society as becoming a 'knowledge society'. Similar to Weizenbaum, Artandi foresaw larger databanks, and she, Artandi, envisioned that socio-technical problems will far outweigh the expected technical problems. We will be more successful in handling complex computer systems, and less proficient in dealing with complex social and political environmental matters. The privacy and data security implications of computers and society are often overemphasised, and it is not often recognised, as Artandi does, that it is a matter of information and society and not of computers and society. This is so because it is the content of data, and not the technology, that is a threat to individual rights such as privacy. The concerns for privacy, according to Artandi, will always take a backseat when it comes to threats such as involvement in war or unemployment (Kochen 1983a:280).

The kind of society that has developed through the stages of pre-industrial, industrial, post-industrial, and seems to remain strong has, according to Bell (Kochen 1983a:279), its economic activities based mainly in services. Bell also depicted such a society as concerned with professional, technical and scientific occupations, and information-based technology. Central to such an affluent society is theoretical knowledge about systems, as well as rational, information-based decision-making (Kochen 1983a:279).

Capurro and Hjørland (2003:343) point out that the concept 'information' in contemporary society is used strongly in the sense of “knowledge communicated.” We notice this in the widespread use of computer networks, and the phenomenal development due to the eventual convergence of ICTs. Capurro and Hjørland also show that knowledge and its communication will always be, and has always been, the basic phenomena of human society. The difference now, as mentioned, is that what separates contemporary society from previous societies, and in that sense makes it an information society, is information technology and its global impact. Due to the digital nature of information, information technology is more than the basic condition for economic and capital development. Information technology also had a definite impact on the natural and social sciences.

Dupuy (1980) argues the myths of the information society around the themes of the myths of postindustrial society; reification of relations with others and the world; and of having increasing quantities information, but dwindling meaning. He refers to the postindustrial society as the information society. We shall refer throughout to 'information society'. The world without grace Dupuy refers to, that is, a world in which we pretend (and even believe) to have increasing amounts of information (quantity), is the one we find ourselves living in. The paradox lies in the fact that in spite of more information, our world is becoming increasingly devoid of meaning (quality). Or, as Weizenbaum (Wersig 1990:187) envisaged, a rubbish-explosion. An 'explosion' of large stores of senseless data does not therefore equal an information explosion. Kochen refers to the “scarcity of needed information amidst a glut of information” (Kochen 1983a:277); and “Data, data everywhere nor any bit to fit” (Kochen 1983a:295). In spite of having more information, meaning is increasingly becoming less (Dupuy 1980: 16). Dupuy also indicates that the ideal in an information society can be interpreted as meaning that there is less and less *absent* information. This is typically the ideal of a society focused on commodity in spite of claims to the contrary (ie that it is a society unhindered by commodities or 'things'). Information is reduced for purposes of processing, storage, retrieval or supply. Large quantities of information that is seen as an object does not guarantee understanding or trust. Cox (2001:57) reminds us that humans are flawed and therefore also their information sources. Cox also quotes Michael Heim's insight that our “infomania erodes our capacity for significance.” Being so fixated on information we end up distorting meaning by collecting fragments and as a result become poorer in overall meaning. It

also neglects the continuities and those things that do not always change, or when something does change it happens in a manner unforeseen (Cox 2001:57).

The phenomenal growth in information production has not been met by increased demand or consumption, but with a decrease (Dick 2000:49). Consumerism, and commercialisation, not only uses 'meaning' to its own ends, but also hinders access to meaning as it replaces human action needed for meaning through creation. It almost seems as if we find ourselves between meaning and meaninglessness. The myths of the information society has its own irony, that is, one where in spite of claiming to be less focused on material aspects, it turns out that the way we produce, process, and consume information is counterproductive to meaning and meaning-making. More, instead of less, human power is spent on material production, even though the processing of information has increased dramatically. Dupuy (1980:3) calls it the "*double myth of both an economic and political nature*" of such a society.

In the economic dimension of the myth (Dupuy 1980: 3-4), information society is viewed as a new stage in the evolution of society. It also sees humankind as freed from material constraints during this stage. This means that we can now focus purely on ethereal needs, that is, immaterial or postindustrial needs, instead of the satisfaction of material needs. Immaterial needs include health, education, happiness, culture, environmental, protection and security, leisure and travel, better relationships with others, etc. The difference between an industrial economy and a information economy, is that an industrial economy transforms matter and energy (input) through human labour into material goods (output). In contrast the information economy is supposed to be a service economy for which the main input and output is *information*. Instead of the information sector restricted to a small part of the tertiary economic sector, it became an essential part of the secondary sector of production, in spite of the rationalising power of converged technologies (Wersig 1990:186).

Wersig also pointed out that information processing and communications, as the major factor in economic development, can be linked to more than production itself. Included is the increase of productivity in all other industrial areas, becoming the support of societal infrastructures, and being an influence in all areas of everyday life. Two examples are

the strength we use to secure ourselves against outside threats, which may be misused, and increased production leading to the initial displacement of jobs instead of the promised increase (Kochen 1983a:277). And yet it has been called a golden age of services, or a game between people without the intervention of material goods. Human relationships are thus no longer affected by things. Such liberty achieved through the lifting of necessity is part of Marx's theory. This, suddenly, is a totally acceptable ideology within the Western frame of mind, and can be witnessed in the inflated tertiary sector. We can now communicate in harmony without worldly possessions or obstacles.

Capitalism is even seen as the 'birth' point of the process where productive forces reach the height of their development and where bodily needs have been satisfied. In contrast to this promise, we notice signs of calculated realism, forces of destruction, and scepticism towards that which does not adhere to the capitalist dream or idea. It is the idea of unlimited wealth and power. The subordination of science through technologies, especially of language, to capitalism makes it more difficult for such an economic market to present examples from the reality it supports and enforces, to verify the idea of wealth and power (Dupuy 1980: 3-4; Lyotard 1994: 286-287).

The political dimension of the myth represents those who seem to think that mutual understanding and peace amongst nations will be made possible through the rapid growth of information *networks* and *mass communications*. This group also views an information society as a move away from the competition, selfish interests, and individualism characteristic of the economic growth of material goods. In contrast to this, an information society will have the characteristics of a harmonious community (as we shall see later on, it does not have 'community'), of a global village. Dupuy (1980:4) reminds us that this is a very Marxian idea of a utopian, transparent, society, which is 'free' from conflict. Yet, we find that instead of being a stage in a progressive evolution or development of humankind, this ideal view of an information society is rather a phase in Capitalist[3] history coping with its contradictions. These contradictions are represented by the fact that, instead of freeing us from material constraints, the fight for material survival

[3]Dupuy (1980:4) defines 'capitalism' as "... *that form of economic and social organisation prevailing from Los Angeles to Vladivostok via Peking, i.e. an economy based on the accumulation of commodities.*"

has intensified. In addition, the extreme monopoly that economic[4] activity holds over social and political dimensions of life, has been increased (and enforced) instead of 'overcome.'

Another contradiction is in a supposedly global and open society, with its claims to the instantaneous dissemination of information worldwide, leading to the enlightenment and education of everyone it reaches. This is counteracted by a decline of interest in, and an increase in indifference, toward foreign news regarding disasters. The world is turning local in a time where it is still advocated strongly as global, especially with regard to agendas aimed at dominating global competition, at the expense of labour and the environment (Dick 2000:50).

The very interactivity and virtual reality of information technology that would have brought this about, made it possible for an individual to avoid contact with the rest of the world through the use of customised information menus. Such a society, in the efforts of becoming global, has turned into a self-centred, individual driven phenomenon. We need to consider if the social costs are worth the membership to a global village, if its values are acceptable and to our benefit, and whether we should not rather avoid the implied 'one best way' approach of those selling and enforcing the idea of an information society (Dick 2000:50-52). The "*false certainties generally propagated by ... ideologists*" (Tschumi 1998:176) are nullified by what Tschumi calls 'disjunctions'. The disjunctions between being and meaning, humans and objects, does not support a view that we are becoming part of a homogeneous, unified and sense-making world. The world in which we are located, is rather characterised by increasing dissociation, distancing and chance.

[4]Dupuy (1980:5) defines 'economics' as "*social activity concerned with subsistence.*"

One definite insight the myths and paradoxes of the information society affords us, is that it is only the *industrial society* that ended up engaging the largest portion of our energies and intellect. All space and time are taken up by this battle for survival in an industrial society. This is in contrast to previous presumptions that it was typical of traditional societies or subsistence economies to spend all their energy in organising survival. In actual fact these archaic societies dedicate the smallest part of a day to material necessities and obsessions. This material struggle in industrial society is still present in the contemporary information society. New communication technologies lead to intensified alienation and conflict instead of harmony. The new technologies spread these conflicts and clashes at an increased rate, and produced a highly unstable system (Dupuy 1980:5). We live in a machine-dominated world in which we abstract in a measurable and precise manner from the fuller reality.

The price we so blindly and willingly pay is the loss of the expressive and qualitative aspects of the world, or an “abandoning of our own embodied existence” (Talbott 2002). Weizenbaum (Wersig 1990:187) saw the problem in the broadening gaps within society when it came to those who know and those who do not know, due to the computerisation of life. Weizenbaum also referred to the problem of a rubbish-explosion in the sense that much of the incredible amounts of data stored, held very little meaning at all to the majority of people when it came to everyday life. It is not whether the technology will be used or not, but rather the cost of its usage. This is where governments normally play a role in ensuring the availability of public services and social tariffs for those without expendable income. Another gap, related to utility, is the relevant literacy required for optimal use, and the ability to distinguish between what is 'rubbish' and what is not. This becomes more complicated as our knowledge of the material earth is decreasingly originating from direct experiences, and increasingly dependent on instrument readings and calculation (Talbott 2002). Yet, despite the existence of immense databases, the majority of people continue to make use of information within their general circumstances. Such information is gained extensively from their communication world as diverse as the media and friends.

New information technologies hold the promise of making such information more widely available, as well as more user-oriented. Maybe such new technologies and the implied promise of user-friendly and sensible services, reflecting how information is integrated in

our everyday lives, will hopefully also lead to an increased awareness of the rubbish-explosion that Weizenbaum warned us about (Wersig 1990:187-190).

Kochen (1983a:280) referred to another conceptualisation of an information society which may counteract some of its negative aspects, related to its very materialistic focus. Instead of the material embodying the exchanges within a society, a focus on the flow of information is preferred. In such a society knowledge will be generated by knowledge-based performances that are knowledge intensive in nature. Information would also reflect regular societal expressions. Conflicts between conserving these regularities and pressures for adaptive change will ideally be managed by reason and human values, rather than by strength and conveniency. Problems, or crises, will arise from conceptualisations of an information society, which is never stagnant, even when it does not always reflect as such in discourses on it. Kochen sees the answer in the help that is part of information and knowledge, provided that it is balanced by human values and judgement. This is more than specialised technical and professional skills, and includes a human-minded, general, approach to bring knowledge to bear on important matters (Kochen 1983a:280-281).

Menou (Kochen1983a:296) supports a much more integrated and interdisciplinary approach to information. This allows for the value that generalists and specialists in the field of information hold. Information plays a strong role in social matters and our ability to cope with these matters. An example is the cultural implications of the epistemological and ethical impact of research in Artificial Intelligence. This kind of research impacts especially on how we used to think about the acquisition of knowledge, meaning, understanding, and wisdom. We need, more than ever, understanding (a form of power) to be able to cope with information overload, and be able to find, distinguish, and form meaningful information from such an overload (Kochen 1983a:296).

The power to act and the power to understand are affected by the absence of control. It results in the structural instability of the system with regard to behaviours. This instability is the inherent incapability to cope with noise (random disturbances) which affects its internal connections. A further result regarding cognition, is the flow of meaning between the individual elements and the whole they constitute, that is blocked. They therefore fail

to recognise themselves in what originated from the synergism or co-operation of their behaviours. A conclusion one can draw from this is that a condition of the ability of a complex system to regulate itself, is a certain amount of indetermination. Such indetermination also includes the system being able to integrate the disturbances that affect it, as well as transforming them into significant experiences. 'More and more information' can now be seen as meaning "*less and less absent information*" (Dupuy 1980:16) in an information society. This is the ideal of a society characterised by the commodification of interpersonal relations. It immobilises the autonomy of such a society's members. This ideal seems like an admirable machine whose work is accessible to our total knowledge.

An information society cannot have community when singularly considered from a viewpoint of commodity. For community you need to assign responsibilities and apply authority. This is made impossible by the complication[5] and contradictions of an information society. If a society is to be transparent and without conflict, it becomes vulnerable to totalitarian ideologies (Dupuy 1980:5). There are those who are for a global information society of which they claim public life is communal. Dupuy (1980:16-17) supplies two reasons why the exact opposite is happening.

The first has to do with the fact that a communality of life requires that each person is and must be responsible for her or his own acts. This includes the unforeseeable consequences of actions (an information society discourages action). When social reality results from such action of forces (similar to those in the natural world), the investigation of responsibilities in an information society loses its purpose. This forms part of the second reason why the opposite is happening to what proponents of an information society claims. Conflicts are no longer face-to-face, or there is a lack of direct confrontation between groups or individuals. Instead of direct expropriation of, for example, territories by the powerful and rich, it is now through the automatic action of the real estate market. Humankind is no longer the dominating entity, but is now managed by another anonymous collective entity, that is, humankind is dominated and pushed by

[5]It is important to clearly distinguish the notion of complication from the notion of complexity: *complication* is the process of becoming complicated, and involves a circumstance/s that causes difficulties; *complexity* is the quality of being complex, intricate.

mechanisms (Dupuy 1980:16). There is no single responsibility anymore, implying that everyone is responsible. This is another rigid misinterpretation of the interdependence of all acts.

Global postindustrialisation leads to a complicated and trivialised societal system which is extremely fragile. Such a system is extremely vulnerable to 'noise', because it does not leave much room for noise resulting from the creative autonomy of its components. This is also the result of the ideal that every situation has only one best way, and that it is becoming very risky to deviate from that way. Political equilibriums (eg nuclear terror control) are rigid and becoming unstable because of it. The only way an information society can cope with such potentially violent situations, is to stay in the vicious circle of programming and vulnerability. The more programming is involved, the more vulnerable a system becomes, which then needs and justifies increased programming. This increases and supports another drawback of the information society, that of a heightened concentration of power which benefits the few. It leaves no place for humankind's ability to marvel and to surprise (Dupuy 1980:17).

2.4 Information society and the element of surprise

We seem to have lost our ability to be surprised by things such as discoveries (big and small) and rediscoveries, the new and the unexpected. Perhaps in our contemporary world of finding triumph in collecting, storing and accessing seemingly limitless supplies of knowledge, very little space remains for anything to surprise us. The only surprise we may still experience is when we encounter an unsuccessful search on the Internet, for example. Manipulation leaves very little room for chance. The domination of machines or more specifically, information technology, is all about manipulation.

Software-controlled machinery alienates us from physical work. Our experience of it has been effectively neutralised and made predictable. Abstraction is not without its benefits to us, but an unchecked loss of the world can be disastrous for humans (Talbott 2002). Human nature is essential to meaningful information. Information that is apart from humans is meaningless, and because of this information is never power since humans can have power with or without information (Cox 2001:56). Being human, we cannot

continue to learn anything if we hold fixed ideas, or schematic views, on everything, as this leaves no room for surprise or creation. Also, the properties of the observed object must be taken into account. If you made an object yourself, its complexity (the information that escapes you) will be nil. This missing information decreases with the increase of constraints one impose on a system. *Surprise* is a property on which the richness of life is grounded. To illustrate this, Dupuy (1980:14) uses the automaton as an example. He uses it, not to mean a combination of articulated parts, but rather a mathematical being that may be put in concrete form as a mechanical or electrical system. This system is constituted by a stimuli-response system (a well-defined input-output relationship). Such a system, though, is called *trivial*, and its behaviour cannot surprise us.

On the other hand, a *non-trivial* machine consists of several input-output relationships. It includes a certain determinism according to which the passage from one relationship to the other takes place. In spite of the system being deterministic, it will seem unforeseeable in its effects and seem to have a certain autonomy, if we are ignorant of its determinism. For us, though, the machine is trivial, according to the quantity of information that will measure our ignorance about it. Important here is that the property of being trivial is not intrinsic to the observed object. It is rather characteristic of the representation made by the observer (Dupuy 1980:14-15). It is typical, for example, of a person who thinks in terms of simple relations, and who is unlikely to consider others as anything more than trivial machines because of the limited attention paid by such a person to others (Dupuy 1980:15). It is these 'others' that are needed for the criticism and explanation of an action, especially since the action may also be criticised and explained by someone else, and not only by the individual.

Such rationalisation, according to Wersig (1990:190), is about more than the object of discourses, and is also the object of historical development. That which is considered rational depends on the dimension of time it appears in. For example, in the archaic or mythical dimension, the world was understood according to myths, magic, etc. At that time those schemes were rational. The same holds true for the dimension focused on religious systems as framework for rationalisation, that is, belief was rational. Even in the later criticism of the Renaissance, remains of archaism and cultural religion can be found.

This critique, though, led to two developments simultaneously, of which the roots lie in the previous dimensions. The one development was ideological, containing a large part of the cultural religious structure, but religious belief was replaced by persuasion. The other development was scientific, revolving around calculus based on empirical evidence, also referred to as the cause-effect-hypothesis, including uniform laws, empirical truth, and logical consistency (Wersig 1990:191). It is this latter scientific model that is the dominating basis of rational behaviour in the contemporary information society.

Two historical developments pivotal to our experience of the world, changed that experience. The first is mathematical time with the invention of the clock (thirteenth century). Humans previously depended on the organic nature of duration and rhythm, such as the seasons, mood and activity. The clock, on the other hand, introduced humans to time as measurable sequences, alienated from human events and subordinating the authority of natural events. In return we received a monotonous, uniform time-line of identical moments. Disengagement and detachment from interrelated events turn us into observers instead of participants, leading to a loss of meaning and elimination of surprise (Talbott 2002). The second historical movement towards abstraction is mathematical space. It is probably not that surprising to find evidence of uniform, mathematical space in the techniques of artists. Linear perspective was developed during the Renaissance, allowing space to be presented to the artist independently of things. Space does not vary anymore according to the nature and quality of the interaction of people. The scientific revolution replaced the plastic quality of space for something passive, uniform, a container to be filled, totally predictable and not space for surprise (at least not for the artist or creator of that space). “Space now contains the objects by which it was [formally] created” (Talbott 2002).

An independent mathematical world came about. Even though it is rational behaviour that distinguishes us from animals, the scientific model brings us closer to being similar to machines. Such a scientific model, based on the idea of calculus, underplay the aesthetic potentials of humans. Examples of these aesthetic potentials are phantasy, play, mysteries, emotions, confidence, happiness, sadness, etc. These very potentials of aesthetics make humans unique, and include the potentials of calculus. Humans have the ability to control, mix, and let these potentials of aesthetics and calculus interact.

Dominant in contemporary society is the results of a singular focus on the potentials of calculus. An example is expert systems which follow a linear rational argument that there exists for every problem various solutions, and these options are evaluated by a calculus which is filled with data (if relevant it will become information). Ideally all of this will lead to a solution, and if not then a decision will bridge such an information-gap. (Wersig 1990:190-192).

Wersig (1990:192) names a number of reasons why a description of the world of an information society where we behave like calculators or machines, is not acceptable. The first is that even though problems need to be solved, it is in the nature of human beings to avoid or even suppress problems or possible conflict as far as possible. When errors cannot be avoided we need the right action to achieve the best in addressing it. The second reason is that solutions are seldom approached using existing calculi. Solutions are developed out of the situation at hand and appropriate to the problem. A calculus should be used because it is appropriate and valid in a given situation, and not because it is there. Thirdly, and related to the second reason, appropriate data is not always available as describable calculus since no one has thought of it before. Lastly, it is more often than not about finding information that we trust because of a trustworthy source. The more our decisions depend on information, the more important it becomes that the information is timely, valid, accurate, complete, contextual, and seen as truth. Pure information requires calculus, but the kind of information that fits not only an appropriate calculus but also our personalities, is what we are looking for. For this to be possible the idea of calculus sometimes needs to be suspended. A world of perfect bureaucracies or functionalised environments will hopefully not be the future of societies (Wersig 1990:192-193).

Steve Talbott (2002), for example, shows how the following developments benefit society. The printing press and the resultant printed book, dominant since the fifteenth century, have to a large extent contributed to setting us free from the immediate and the local. Existence in text made a greater impression than actual events. In the nineteenth century the telegraph took this freedom further by releasing us from the physical transportation of communication. Information and text became decontextualised with little relation to communities, people, and places where we live. Information became

fragmented, isolated, and irrelevant to our lives at large. We do not, therefore participate anymore in the traditional sense, but have become spectators of or audience to news events, etc.

Think back on the effect of Shannon's information theory and its consequent impact on information technology and a new kind of decontextualisation. Seeing as how our world increased in complexity, it is not too surprising that the 'tearing apart' of people from their organic connections to the immediate world may even be inevitable. We now seek abstraction, the will to disembodiment, the rhythm and predictability of clock time, and bits of information uncluttered by our material existence. This almost self destructive tendency to deliberately ignore the qualities of things and the insistence upon disengagement from physical existence, remains a threat (Talbott 2002).

The negative aspects can be turned to our benefit if we recognise the positive potentials of the predicament we find ourselves in, especially if we can successfully balance the calculative and meditative potentials of people into a comprehensive way of thinking. We need a positive breather from all the negativity that reference to the myths or broken promises of an information society that is shown as isolated, fragmented, alienated from its surrounding world, brings about (Talbott 2002). Using television news (or any other media) as an example, the possibility of an effort to fully integrate, or reintegrate fragments of news, locally and globally, without some appearance of disjointedness and incoherence, is seldom feasible.

We will be overwhelmed if we attempted to try and sustain a constant level of interest and deep involvement regarding global awareness. It is necessary to remain free enough to be able to contribute meaningfully to our immediate community needs as well. The abstract distance between us and the rest of the world is unavoidable, but now we have the freedom to choose how and where we want to become connected and concerned in the world (Talbott 2002).

The inheritance of decontextualisation and its manipulation allows us to form our own meanings from a disparate whole. There are no longer traditional social or natural surroundings that supply us with a given coherence and meaning. The spectator

becomes a new kind of individual participant in meaning creation. Abstraction frees us from the world, but comes with the danger of being caught up in the distancing effect of abstraction. Freedom from a compelling world comes with its own responsibilities and a new sense of community becomes essential to survival and making the most of our freedom (Talbott 2002). To truly become community, we may do well to avoid losing truly human features, such as the readiness to handle risk or overcome the fear of risk, the readiness to take responsibility instead of shifting personal responsibility to calculi or systems.

We should not let occasions to develop self-esteem slip through our fingers, and accept the consequences of our decisions, especially when it comes to unforeseen circumstances (Wersig 1990:193). More human-focused systems may serve as decision-support systems, rather than decision-making, to decide on appropriate action in the face of risk and uncertainty. This goes beyond a purely scientific, reductionist, oversimplified approach.

Moving away from a one-sided focus allows for the complexity of situations faced in contemporary society to be recognised (Kochen 1983a:278). The postmodern space of interior reflection and the allowance for alternative interpretations is the space in which we are free, and the manipulation of text and its consequent arbitrary relation to context, is the context of contemporary society (Hayles 1987:26; Talbott 2002). Decision-making, problem-solving, creativity are all involved and affected by being put into action and how such action relates to power.

2.5 Power and action in an information society

Power is the ability, capacity, or skill, to *do* something; madness, for example, is another way of doing and controlling abilities. Power is control and influence over other people and their *actions*. Power is the authority to act or do something according to a law or rule. When we define power, we need the concept of action. Action is doing something toward a goal, or a process of doing something in order to achieve a purpose. For this we need power in the sense of physical strength, whether it is the power of personal conviction, or having been persuaded to achieve a goal by a person or authority wielding

power (eg political, social, financial). Action is movement – the way somebody or something moves or works, or the movement itself. Action is thus a function (the way in which something functions) or influence (the effect it produces). In mechanical terms action is the force applied to a body, relating to power. Action, though, is not only forced behaviour, but can also be voluntary or intended behaviour. Action as part of society is a form of power. Human action should be open, and be for the betterment of humans, and not for oppression.

One should seriously consider the function of science and technology in society in order to understand the position of human beings in the contemporary world. This includes scientific thinking, development, innovation, compassion, and curiosity. Interdisciplinary interaction should lead us to knowledge implementation. This is also the crucial link between an information society and information science, a special kind of relationship in which we can speak of a society of informatisation. Informatisation is the actualisation of meaningful information, taking place in the information society which, in turn, is the milieu of meaningful information.

Knowledge can be transformed into *action* once a theory has been given *meaning* through its application, whether as a physical system or as an action leading to further study. Our knowledge, ideally, should make our actions not only possible but successful, especially if the act of speech ultimately culminates in powerful action. The power of instrumental reason as well as the cynical reasoning of institutionalised power, is something we seem to have very few forces with which to resist such overwhelming and determined power.

The act of invention (Ulmer 1990:159), is one way of creating goals independent of predetermined goals. Inventing as we go along still requires structure as leverage on handling unforeseen circumstances and problems arising. Taking such action, is an act of taking responsibility back from the institutionalised forms of theory and practice. Changes in the relationship between institutions and society involves the disintegration of boundaries between truth and action. Adorno (2000:6) points out that theory and practice do not fit together neatly and are definitely not one and the same thing. The tension that exists between the two is crucial to the existence of both. Theory that has no relation to practice will in time break down into a complacent game, or become a piece of dead

scholarship. It is rendered indifferent to our living minds and active human beings. The same is true of a practice that freed itself from the constraints of a theory and rejected thought on the grounds of its own superiority. Such practice leads to meaningless and continuous organising of things, and the belief that one has achieved something of importance. It does not reflect on whether such activities have a chance of impinging on reality at all. The objective possibility of being made real in practice becomes less if everything only relates to the pure will. Theory needs to want to achieve something, that is, from spontaneity, the immediate, and active reaction to particular situations, for a valid practice to be possible. For society to have the power to shape its own future, it needs resistance to the idea that theory and practice do not fill the gaps in each other (Adorno 2000:6-7; Ulmer 1990:157-161). A common world (a common, material world), created by invention and making, is necessary for the existence of human history, action, and encounter. Such a common world unites humankind and makes communication possible, with or without conflict. At the same time, this common world also separates them. Dupuy (1980:5) uses an effective example, that of a table that brings people together *because* it stands between them. Either extreme, ie total isolation or indiscriminate proximity, would be detrimental to communication. The industrial capitalism that the information society inherited, does not value personal relationships. It alienates people from one another, instead of recognising that people are united in their ability to create, invent, and can still be caught by surprise.

Action in the form of surprise and creativity, crucial elements in invention, indicates to us the strong human accent of knowledge endeavours, the existence of which cannot be denied. The traditional view that only knowledge that is free from mere human interests can truly orient action, is rejected. Knowledge is seen, not as disinterested, but as conditioned by human interests. True freedom from blind domination can only be achieved in a totally emancipated society of autonomous, responsible persons, or, as a community (Hoy 1986:132). The ideal held out may be freedom from coercive social power by freeing knowledge and reason from ideologically coerced distortion. The so-called ‘freedom’ from material things predicted for the information society could block communication, leading to the opposite happening, for example in the form of consumerism. In truth, the relationships between people are defined by the process of *creating things* together, building a common world. Such a common world is therefore

created by *making*. This makes action and interaction possible, and because action is transient it needs to be actualised and fixed in memory. The real danger is the insistent presence of consumerism (through material things which we are supposed to be freed from) replacing action and creation, because of its distrust in the risks such action poses. Displacing or denying action cannot be desirable, as action is necessary to beget history, it offers meaning and direction, and actualises history into memory by the efforts of poets and historians. To act is to have power, especially if human action is open.

History-making offers an understanding of humans in contemporary society, and understanding is always a form of power. It is imperative for humankind to avoid becoming mere spectators, instead of being participants, in their own history. Thought exists in every action and it is essential to see and understand on which modes of thought accepted practices rest. (De Beer 1998b:90-91; Foucault 1981:31-34; Wersig 1993:230-233).

What, then, truly distinguishes an information society from an industrial one? The major difference is the new intellectual tools used by societies to obtain an image of themselves, examine themselves, and then to *represent* themselves. Another difference is the replacement of the mechanistic representations of society. This was brought about by major progress in the 1960's and 1970's in biology, theory of cognition, and the general theory of systems. The mechanistic representations of society has largely been replaced, in the human sciences, by a phenomenal growth in scientific progress, especially in thermodynamic, biological, cybernetic, organisational, and *informational* metaphors. Some of these offered rich content, but most were advanced without the necessary precautions and were indiscriminately adopted without determining its worth (Dupuy 1980:6).

2.6 Conclusion

Power relations have been altered forever, while society still clings to those power perceptions inherited from a very dominant and far-reaching industrial era. Meaningful information and its configuration through information science, from which action flows, is important because scientific progress influences the meanings people appropriate from information as represented by progress. People interpret and experience developments in unique and uncontrolled ways not necessarily foreseen by those involved in scientific work. To be able to understand how people experience and react to their environment, it is necessary to take into consideration not only how the individual views himself or herself as 'being-in-the-world' (*dasein*), but also how the individual as part of a group exists, reacts, creates and experiences within society at large. At present we call this society an information society. *Dasein* at the same time is also beyond the world in which it exists. The next chapter focuses not only on the relations of people to each other, but also on the world within which they find themselves.

CHAPTER 3
ONTOLOGICAL MILIEU OF MEANINGFUL INFORMATION

3.1 Introduction

This chapter relates to the information society in the sense that the individual does not stand in isolation. The individual forms part of a larger society whether it is an information society or otherwise. The individual not only relates to the world around him or her, but also to others as well as objects in that world or worlds. These relations impact on our meaning-making of knowledge irrespective of it being scientific, social, cultural or personal knowledge. This chapter also considers Heidegger's concept of *Dasein*. It is necessary to understand our relations with others and the world, as well as the implications for meaningful information if such relations are objectivised. Such an understanding is important since humans, as individuals and with others are essentially meaning-giving beings. The ontological milieu is the social environment of the essence and nature of being or existence of things.

3.2 Meaning of being (world) and meaningful information

The meaning of the world as we perceive it indicates a concern with cognitive capacities, that is perception and action, and not only with higher capacities such as language and memory. There are also approaches that do not recognise the influence of the individual human being, but only as a part of a larger meaning-giving structure. This is discussed in detail by Tasić (2001) who refers to the viewpoint of structuralism that the science-structure develops of its own internal necessity, and is independent of the intentions of individuals (eg Cavaillès, Lévi-Strauss, and Saussure). To these thinkers the individual human being's personal desires and intentions are irrelevant, and it is something larger that speaks through someone when trying to prove a theorem or tell a story.

Through the rise of the new or modern mathematics, for example, formalism was introduced due to the perception of the social sciences as methodologically weak (Dupuy & Varela 1992:18-19; Tasić 2001:112-113). On the other hand we have those (eg Kierkegaard, Husserl, Heidegger, Merleau-Ponty) who strongly focused on understanding

the human being in his or her existence, not as a passive being and not always the same, but as a human in 'becoming' and forever changing. Human existence is therefore not approached as a biologically fixed, measurable and predictable fact, but as a lifelong project. This approach is referred to as Existentialism (the Latin word *existere* means to stand out, to come forward, to become) and has a close relationship to Phenomenology (Van Vuuren 1988:214-215). The intention is not to discuss these developments. It is mentioned to indicate that the two strongest opposing groups were those that were humanistically inclined (eg intuitionism, phenomenology, existentialism) and those who focused purely on structure and form (eg formalism, structuralism, linguistics). Yet the two groups are never mutually exclusive as these movements had and still have influences on each other (especially methodologically and philosophically). These movements are important because they offer different ways of approaching and understanding, for example, meaning and language.

Our focus gives prominence to the human being, since our main concern is the configuration of meaningful information by humans for humans (involving interaction). Meaning may be determined by a variety of human and nonhuman factors. This does not render other approaches invalid or useless. The following paragraphs, then, are about *dasein* (subject) and the self, and its relation to its worlds. The discussion of *Dasein* is important in the consideration of meaningful information. The reason for this is that it sheds light on the complexity of relations in which *Dasein* lives and from which the meaningfulness of things are drawn. This constitutes the context within which a person understands him/herself and his or her world.

3.3 Meaningfulness and *Dasein*

How the individual person views him- or herself as being-in-the-world[6] (whether as part of a social group or in the global sense) also determines his or her relation to others and the world (or different worlds within which others may appear). This in turn will have a strong effect on how meaningfulness is determined or even rejected. It may play a role in why and how an individual or a group distanced him-, her-, or themselves from the meaning of

[6]The hyphens indicate that the human and his/her world cannot be thought of separately (Van Vuuren 1988:216).

particular information (eg cultural or personal rejection). *Dasein* can be translated with 'being-there', and defined as the kind of being whose mode of being is to be concerned with its being. Heidegger's *Dasein* can be explained as being-in-the-world; being destined to be a being that is open to Being. *Dasein* is to transcend existing in the world and be a being-toward-Being, and to experience Being in the process. This reality of Being is the goal of *Dasein*'s existence; to experience Being as it manifests in history.

The self is also future-directed and concerned to care for its being. The process of looking ahead also constitutes the past, similar to time being constituted by looking ahead, and involves "*a living towards the future and not simply a living out of the past*" (Kruger 1988:91). The past is future-directed because we not only think of the past as it was, but also as it could have been. The continuity of lost time is constituted by intertwining empirical recollections with interpretative actions. It is not simply a matter of cause and effect.

According to Tasić (2001), Brouwer described the self as felt, experienced, and lived. The self is never given with logical certainty because it is not meant to be around forever, especially since it is also a mortal body. It indicates the futility of seeking some final and ultimate certainty. This has to do with the danger, pointed out by Brouwer, of forgetting the human being as central to scientific endeavours. The example quoted in Tasić (2001:46) of such a danger, is "*considering the human body to be an application of the science of anatomy*."

Schelling (Tasić 2001:121) refers to a particular mode of thinking, that is, not Descartes' "*I think, therefore I am*," but rather "*I am in a particular way*." Stated otherwise, as being in the mode that is called thinking. One may therefore be at liberty to use one's imagination to produce meaning for oneself. One may feel compelled, for some or other reason, to justify this private meaning by taking into consideration other outside or public criteria, even though one does not have to blindly follow the practices of a community (George 2000:17; Tasić 2001:42-46, 120-122). It is what we think *about* that we are concerned with and in what way we think about our world (Kruger 1988:12).

The human being has a physical bodilyness that cannot be ignored. The human being in his/her world implies that the human and his/her world are not independent entities. Humans are 'embodied' persons and the world is not simply external stimuli or only physical reality. It is a human world as experienced by humans (Van Vuuren 1988:216-217). The mechanistic viewpoint of the body as a machine controlled by biochemical processes have been strongly disputed, and as our discussion indicates here is too one-sided to be accepted. Such a view also splits the subject from the object, as we see in the radical dualism of Descartes, also called Cartesian dualism. The duality that Descartes put forward is between mind and body and human being and world, thus having a twofold reality (Kruger 1988:12-13). The human body appears or lives in different, yet simultaneous, worlds, as will be explained next. 'World' has environmental and communal dimensions, and is the matrix or horizon of *Dasein*'s total relatedness to others and entities (relational totalities) and the matrix of total meaningfulness.

This total relatedness of *Dasein* has the world as its 'wherein' – this is not in the spatial sense, but it is the convergence of all patterns of referential totalities (including the environmental and the social worlds) which reflects the nature of the community (George 2000:90-93). It is about how humans are *in* the world and how the world appears *to* human beings. The world and human beings are correlations of each other and implies a coexistence of human/person and of world/situation. The one cannot be considered or thought of without the other and is therefore in a dialectic relationship. It is only alone *through* the world that the self can be understood. To be able to understand human beings, we need to understand all the worlds in which human beings exist and experience. This includes our existence in the world of instincts and determinism, the world of responsibility towards others, and the world of our own individual existence and the meaning of our existence (Van Vuuren 1988:217-218). The world belongs to *Dasein* and is *Dasein*'s system of total relatedness. The world, then, as the matrix of relational totalities, is in *Dasein*'s own being. The meaningfulness of these relational systems can be understood in one's own being or existence. (George 2000:90-93).

Dasein allows entities to be involved in finding meaningfulness. Stated differently, *Dasein* frees the 'ready-to-hand' for meaning by allowing the involvement of entities. The totality of involvements is the world within which the entities can have their involvement.

The world is not a collection of things, but a matter of *Dasein* being in the matrix of relational and referential totalities. The matrix of meaningfulness is also called *significance*. The world is a referential totality established intersubjectively. In this it is possible for *Dasein* to interact with other entities, human and otherwise. There are as many worlds as there are different meaningful or significant referential totalities (eg work-world, academic-world). The relationships between and within the environmental and social worlds represent its complexity and the totality of its meaningfulness. It must not be understood as *Dasein* creating the world, but as *Dasein*'s way of giving meaning to the existential relational complex within which he/she finds him/herself (George 2000:93-94;132).

We, as being-in-the-world (*Dasein*) not only model the world according to ourselves, but interpret ourselves according to the world constituted by us (Van Vuuren 1988:217). On the other hand, if 'world' is seen as a term loaded with meaning, then it can be a matter of creating a world. Heidegger, though, does not make meaning the property of *Dasein* at the cost of the reality of things, and only stresses the importance of the role *Dasein* plays in the meaning-giving act and the secondary meaningfulness of entities. Three possible 'places' of meaning are (i) in the mind of the author/speaker; (ii) in the world shared by speaker and audience; and/or (iii) the world shared by author and readers – 'author' and 'reader' here indicate those of written text as well as visual images, or of any other representations of information (Barwise 1988:23; George 2000:133-141). Kruger, quoted in Van Vuuren (1988:218), said that "*man*[7] *is a being which is always open for all the things-that-are*." *Dasein* can be seen as having a passive as well as active relationship to its world or places of meaning.

Against this background it is necessary for us to look specifically at the relations we have to others and the world, as well as the necessity and danger of objectivising those relations. The other place of meaning, the representations of information, relates to this objectification.

[7]The human as *Dasein*, or 'being-there.'

3.4 Relations with others and the world

From the previous paragraph it should be clear that, even as individuals, we do not stand in isolation. We share our world with others who are in the world in the same way as we are. To be human "*means being in relation to others*" (Kruger 1988:81). This is an interpersonal understanding of what it constitutes to be a human being, from our birth to our passing away. We are in touch with one another, it is part of being-with-one another. Heidegger (Kruger 1988:83) called it "Mitsein." To illustrate this, Kruger explains that loneliness can only be possible because people tend to be with one another, and loneliness is part of each individual's primary experience. We stand in relation to others through sharing the things of our world and encountering things together in that shared world (Kruger 1988:83, 86). This does not refer only to a 'friendly' kind of sharing, but also to other kinds even if they are in animosity, real or imagined.

Our relations with other people form part of the "Mitwelt" or 'with'world[8] (Van Vuuren 1988:217). A person is not only an individual that stands in relation to other people and the world, but is also part of a group consciousness. The self and the 'matrix of meaningfulness' within which he or she is situated, also influences, and are influenced by, others. Even in total isolation, that isolation of being and existence conveys something about the relation of the isolated self to others and the world. Yet, we need to allow for the involvement of other entities to be able to free the ready-to-hand for meaning. This allows for meaning other than those meaning/s already held by *Dasein*. It is important to avoid both the temptation of ultimate grounding as external references into an ultimate reason and truth (order); and the temptation of complete absence of any regularity and disconnection from any order at all. (Dupuy & Varela 1992:22-23). Interesting in Tasić (2001: 47) is the reference to Nietzsche's viewpoint that the world as displayed by logic and science is not the objective world, but is based on a previous interpretation. The apparent world is therefore the only one and the so-called real world,

[8] "Mitwelt" forms part of the three simultaneous aspects of being-in-the-world which is characteristic of the existence of people. The other two worlds are "Umwelt" (the world around us, ie of objects, the natural, biological world of natural laws and cycles, and biological determinism; and "Eigenwelt" (selfworld, selfrealisation, My-Self, relationship with myself; subjective and inner-experience as well as the basis on which we see the world in its true perspective and on which we enter into relationship; what something in the world means to me). Van Vuuren 1988:217-218.

a lie. The postmodern approach was an important break from institutionalised sciences, and traditional patterns of exploration, observation, and participation. One cannot remain in such a state, since time and space continues to change, mutate and demand alternative approaches. A willingness to be open to the unknown means that we accept the meaning in everything that exists or '*is*'. This includes that which is technique (mystery is also present in the technical sense) and that which has not been created or discovered by human beings. Also included is the acceptance that meaning is not always public or accessible.

Sometimes non-sense is more prominent than sense, and that which is at the same time public and hidden, is mystery. That which is external to the human influence plays a definitive role in what humans do and do not do (De Beer 1991:22). There is also a realisation of the impossibility and undesirability of seeking one ultimate truth, of approaching our world as something to be merely discovered by our enquiring gaze of objective observation. Scientific experimenting is not merely the true observation and exposing of facts as it is revealed. Rather, it implies complex interaction between theoretical concepts and observation, between scientists through discussions, and choices that need to be enacted. This may imply that meaningful information is not something already existing 'out there'. Meaning is never fixed – Derrida refers to the play of meanings. Differing from the phenomenological position, Derrida suggested that experience is not an immediate temporal presence alone. Such an immediate experience needs to place itself across or against something else to be experienced at all. That experience is already influenced by preexisting experiences, and the meaning of that experience of an object for example, cannot therefore be fixed or stabilised. This process of change is called the ‘dissemination of meaning’ (Reynolds 2002). Existence of the subject as a being that ‘is’, is not undivided and self-contained as a self-presence, and the immediacy of experience not possible. In this Derrida seems to have seen phenomenology not as separate from metaphysics, but as a ‘metaphysics of presence’ or logocentrism (Reynolds 2002).

The objectification of relations to others and the world is already referred to in the chapter on the information society, regarding the commodification of information. It is used in this chapter to illustrate that a very real danger to the ‘play’ or richness of meaning is the

objectification and commodification of relations and information. The reason for this choice is that what has proven to be detrimental to our relations with others and the world, is the objectification of those relations. To reify something, is to think or treat something abstract as if it existed as a tangible object. To objectify, is to think of or represent an idea or emotion as if it were something that actually exists; it is also to reduce something complex and multifaceted, to the status of a simple object (*Encarta Concise English dictionary* 2001, sv 'objectify'; 'reify').

We are concerned here with the danger of producing values which do not allow for the depth of meaning and understanding we seek. The approach in contemporary economic structures seems to be towards economical needs only, ignoring that which is truly meaningful and enriching. Capitalism, though, needed the development of a service economy to ensure its indefinite continuation. This leads to further alienation instead of communal harmony that it purports to support. Waste has been the key mover of capitalist development. This includes the waste of raw materials, energy, human space, and time. The saturation of consumers' material needs was avoided through innovation and a decrease in the life-span of material goods. These 'new' products (same product, new name) contained even more un-renewable raw material. The resultant energy and ecological crises sparked an awareness in the capitalist approach that it needed decentralised locations to move its problems to. Economic growth was given a new base, called the new international economic order. This new growth entailed simply to send industries to Third World countries as their new base. This meant that problems such as pollution, industrial-related illnesses, and the disruption of time and space, are made someone else's problem. The so-called information society ideally could now truly focus on the nonpolluting growth of immaterial productions and service-based economies. Marx, then, is quite prophetic in having stated that " ... *capitalism begins when human labor loses its power to produce use values for the worker ... , thus transforming labor into a commodity which has only an exchange value for the worker*" (Dupuy 1980:6-7).

The worker is therefore turned into a commodity through the reification of the working or production relations. The energy and ecological crises make it impossible for capitalism to use traditional avenues of economic development. It needs to transform other relations, that humankind has to people and the world, into commodities. All of this effort

is in pursuit of growth, and the main reason for the large scale development of services. The concepts of *use value* and *commodity* are now applied to areas foreign to them. This brings us to the two modes of production that can be used to produce any use value, ie an autonomous and a heteronomous mode of production. (Dupuy 1980:7-8).

An autonomous mode of production implies self-governance, personal freedom, independency from others, or the will guided by its *own* principles (*Chambers' 21st century* ... 1996, sv 'autonomous'). In this mode, for example, we learn knowledge and meaning by becoming familiar with that which is part of life inside a meaningful environment. People stay healthy through leading a wholesome life, and render services to those who need it, while avoiding the danger of structuring their lives in terms of how others live (Kruger 1988:88). It is such care of oneself and of others that is the being of *Dasein*, and the opposite of indifference. The freedom of the individual therefore does not mean indifference but a greater responsibility. Because we have freedom of choice and decision, we also have responsibility and even guilt. Human freedom's boundaries are determined by our unique situations, that is, we have the freedom of choice within a certain situation (Kruger 1988:88-89). The care of others also form part of heteronomy. One has an active relationship with the space in which one lives, and is based on movements that feed metabolic energy. Especially important to remember of an autonomous mode of production, is the fact that what is produced by this mode of production cannot be measured, estimated, compared with, or added to other values. Use values produced in this mode escape the control of economists or national accountants.

A heteronomous mode of production involves being subject to different external rules or laws, and is the combination of various aspects, usually not associated with each other, within one system (*Chambers 21st century* ... 1996, sv 'heteronomous'). Within this mode the learning of meaning and the acquiring of knowledge, for example, takes place within the walls of a professional institution. It is a formal way of learning, whereas the autonomous mode is informal and personal. People stay healthy through the care of others, and also refer those needing help to the relevant people who provide those services. Yet, heteronomy and autonomy are not mutually exclusive. For example, autonomous use values may be enhanced by the heteronomous mode of production; or

the professional, predetermined curriculum may enrich what people do on their own or through mutual aid. (Dupuy 1980:7-8).

The paradox of the service economy lies in the rearrangement of the physical, institutional, and symbolic environment by the heteronomous production of values. Such a thorough restructuring paralyses the autonomous ability to produce use values. The resultant paradoxical effect, then, is that the heteronomous service-producing institutions bring into play ever-increasing pervasive means. As a result we confuse education with the educational system, habitation with urbanisation, or health with the medical establishment. This is caused in particular by the commodification and objectification of our relations with others and the world, and even oneself. The drawback of an artificial reification, or objectification, or materialisation, lies in the fact that people do not make sense the way they make a table. It results in the loss of people's ability to solve their own problems within personal networks. Social struggles become disempowered as the capacity of individuals to refuse the unacceptable is weakened and discouraged. Humankind has, in history, always been able to cope with threats (such as the inevitability of death) by giving them meaning and interpreting them in terms of culture. The above problematic is linked to the characteristic of the industrial and postindustrial / information societies, where an alarming number of aspects of the human condition are becoming meaningless. This is especially because you have to ask how you give meaning to something that you are trying to eliminate at all costs. (Dupuy 1980:8-9).

This elimination, or disempowerment, creates 'meaningless' spaces due to a capitalist society breaking with a traditional experience of space ('experienced space') based on connectivity. The continuous, connective path people had to any two points in that space, has been fragmented (or disconnected). The personal space of each individual has become distinct and distant centres. The perceived world acquires a falseness because we have become spectators instead of participants. Such spectator status places one in a position of illusory omnipotence with regard to how the world is represented as something that passes by and vanishes from sight. The myth of transportation systems, for example, is based on such a restructuring of space and time. The myth is one of coalescence, a return to a person's traditional neighbourhood through the cancellation of the meaningless kind of space-time. An example is the global network brought about by

the presence of airports which makes the whole world seem present. Yet we notice that for the majority of people the global village connectivity is a loose web through which it is easy to slip through or become entrapped (Dupuy 1980:9-10). The objectification of relations and information, has implications for the configuration of knowledge (representation being one of those implications), and our making sense of things and the world. Sense and meaning, in their individual meanings, are very close. The word 'sense' has two basic, very important definitional foci. The first focus is that it is any of the five faculties used to obtain information about the external or internal environment, ie touch, smell, sight, taste and hearing. The second focus is to be aware of something by means other than the five senses.

Meanings vary quite a bit, such as sense being an awareness or appreciation, the ability to make judgements, soundness of mind, one's wits or reason, a general feeling or emotion, understanding, general and overall meaning, specific meaning, and even consensus, wisdom (to be wise) and that it possesses practical worth. As a verb it includes the act of sensibility and rationality after a period of foolishness (coming to your senses)! (*Chambers 21st century* ... 1996, sv 'sense'). We could relate these varied definitions of 'sense' to the different ways we have and acquire meaning. Even if something does not make sense to us, for example, it still has meaning that may be closed to us, understood by someone else, or at another time and/or in a different context. We seem to accept more readily something as true or probable if it makes sense to us. We make sense of things and the world, often in a world in which we objectify perceptions through symbols and representations for it to make sense to us.

It is necessary to realise that another kind of objectification also takes place, which is a positive aspect taken from the romanticist and intuitionist Bouwer, as discussed in depth in Tasić (2001:45-48). It is referred to here only in brief and it forms part of Bouwer's views on language, the will, and mathematics. Bouwer describes the real world as an apparition, and that one's exterior world consists of things that are essentially only sequences of one's own thoughts. The world's perceived form is essentially the act of the will. How this relates to objectification and language is as follows. The construction of objects is in thought, "*that is, of persistent, permanent things (simple or compound) of the perceptional world, so that at the same time the perceptional world becomes*

stabilized" (Tasić 2001:47). Bouwer reminds us that this does not mean that it is merely passive thoughts, but acts of the will (active involvement). It is from this stabilised perceptional world that much of our meaning-forming and understanding is influenced and determined. It is our exterior world that we live in and which forms part of, and originates from, our perceptional and subconscious worlds.

3.5 Conclusion

The way that humans view and experience their existence or being as individuals and members of a society, impacts on how they represent and configure information. The aspects covered relate to, and are inseparable from, 'being-there,' and our being with one another in a common world, in considering what constitutes meaningful information. Even if we may have the opinion that the perception of phenomena ‘feels’ immediate, unique and short-lived, we can appreciate how our previous experiences do influence experiences we have in future. In the next chapter on the configuration of meaningful information, aspects only briefly indicated so far (language, image, unreason, etc) will receive attention.

CHAPTER 4
CONFIGURATION OF MEANINGFUL INFORMATION

4.1 Introduction

This chapter involves the ways in which information and knowledge are configured and represented. It is specifically about representation in language, visual images, the role of aesthetics, and power and madness. These matters have a most definitive influence on what we consider meaningful information to be, or how we configure it. Such configuration is not a process with a definite beginning and an end. It is ongoing and changing according to happenings in language, imagery, aesthetics, power relations, and approaches to madness. Representation appears strongly, because a configuration of meaningful information seems to be most often influenced by how we represent our knowledge in signs, symbols, images and institutional approaches to madness and unreason. In a similar sense, the way we configure meaningful information will eventually determine how we represent it.

4.2 Configuration and representation

To represent something is to present (to pose, suggest, depict) something again, to serve as a symbol or sign for something, or correspond to that something. It is also defined as meaning to speak or act on behalf of something else, and it can be an example of something. The most common examples given are an image, painting, sculpture, letters representing sound, etc. In art it represents those artworks which depict objects in a realistic rather than an abstract form. Finally, representation is the doctrine that, in the perception of the external world, the immediate object represents another object beyond the sphere of consciousness (*Chambers 21st century* ... 1996, sv 'present', 'represent', 'representation').

According to Varela (Dupuy & Varela 1992:19), a fundamental shift in cognitive science was the questioning of the notion that cognition is representation. The problem such a notion held was that it adds up to the tacit and unquestioned commitment to realism or objectivism about the way the world is, and how we come to know it. This is because the

two assumptions contained in such a notion of cognition as fundamentally representational, is that it assumes we inhabit a world with specific properties (length, colour, sound, etc); and that we recover these properties via internal representation. Also ignored in such an approach are the many ways that the world is, including the different worlds of experience, which depend on the structure of the being involved and the kinds of distinctions he or she is able to make (as we already indicated in the chapter on being and *Dasein*). The shift is to a non-objectivist view on how we take our world to be, and it covers the approach of people working in diverse fields. Dupuy and Varela (1992:20) call it an enactive approach, emphasising that cognition is not the representation of a pre-given world. Rather, it is the enactment (action) or bringing forth of a world on the basis of history. This enactment includes the variety of effective actions that a being can perform.

The mind is therefore more than a mirror of nature. Derrida's critique (as explained in McKenna 1992:45) of our notion of representation as the representation of being, of being present, or of being as a presence in which representation originates, is of importance in any discussion on meaning and meaningful information. Derrida uses writing (one of many representational media) as his example for such a critique, especially since writing have traditionally been seen as a dangerous supplement to verbal speech. This is in spite of the fact that writing proves to be indispensable to the establishment of verbal speech itself, even if seemingly chronologically and hierarchically second to it. Writing as an inventive process creates 'new' knowledges and, especially in industrialised countries, became the dominant medium of communication. The views of Derrida on language is included in the paragraph on language and meaning (Dupuy & Varela 1992:18-20; Girard 1992:28).

How we represent knowledge is an indication of how we make sense of things, as well as the existence of a process of meaning-making. The meanings of things help us to make sense of them. Our meanings of objects shape our experience of them, and our experience of objects affects our meanings of them. We use words and images to form concepts which refer to existing objects. We are involved with information and its representation (fashion, lifestyles, technology) and acquire an understanding of what information means. Therefore, it seems that information does not have implied value, but

only has value in an appropriate context (time, use, space). We perform logical operations on things after we have seen them in a certain way, because logic does not on its own offer an image of the world. This implies also that we approach information not only as a recorded, permanent and physical entity, but as separate from its medium of expression as well. According to Wersig (1993:231) new technologies are still impersonal, but the source has become less important and the use of knowledge more personal because of increased interactivity of a different kind of nomadic society. Diversification of knowledge representation is good, but not if it leads to artificial separation, fragmentation and opposition instead of a focus on complementary characteristics (Tasić 2001:46-47; Wersig 1993: 231).

More information does not imply meaningful information, or even useful information (see the chapter on the information society). To be usable, information needs to have meaning. Thinking is one form of action, and understanding and meaning add further usefulness. To allow for meaningful application the research or work done should be supported by a wide range of contextual and temporal factors. Context and time may change, and could affect changes in knowledge needs; and knowledge needs and desires affect changes in space and time. This is important to science since meaningful information is often approached as information flowing from digested knowledge and can lead to actions and exploration activities. These activities, then, become possible the moment we grasp and make sense of theoretical ideas (De Beer 1994:84-85; De Beer 1996a:80-81; De Beer 1998b:75-77; Ulmer 1990:159-160; Wersig 1993:232-234). Meaning, and therefore knowledge, is represented and shared mainly through language, whether the system of representation used is imaging, speech, writing, painting, or symbols. Actionable, meaningful information is affected by the manner of communication. The dynamic nature of language allows for almost infinite variations and possibilities of communication and therefore meaning.

4.3 Language and meaning

Language and meaning are two dominant aspects in the meaningfulness of information. Much of what we know about the world has been learnt through oral and written linguistic communication (people conveying information to other people). To understand why

people attribute different meanings, or meaning at all, we need to understand the how. Since language is the main learning (formal and informal) 'tool' of meaning, it needs serious consideration. Any sentence or text potentially has a wide range of possible meanings. The ‘right’ meaning is a function of what the author means, something only the author has access to. The question is whether the correct meaning is that of the author alone, thus whether there is a correct meaning at all. One cannot claim that anyone had ever unambiguously known what someone else means, and thus that no one means the same thing as someone else. Language, after all, could be seen as a flawed vehicle for the communication of the will or intention, and not as a continuous creative flow (Bouwer), and error (Nietzsche) might well be one of the conditions of life (Tasić 2001:46).

Barwise (1988:23-24) identified certain aspects of language interpretation that seem to be in conflict, especially when we consider both public and private aspects of meaning as vital to understanding. The first aspect is the world-oriented tradition in semantics. This approach has focused on the public aspect of meaning. It attempts to identify the meaning of a sentence or text with its truth conditions. These are the conditions of the actual world that are needed to ensure its truth. Truth, though, is seen by some as a process of creation constructed by the creative subject (*Dasein*), while others maintain that it is a process of revelation, disclosure, or unconcealment. Linking truth to action, truth may also be disclosed through activity which makes it a familiar and reliable part of our world. It is also assimilated into our intuitive understanding, which implies that the intuitive and the formal-linguistic aspects influence one another. Especially of importance is the view of Heidegger (as put forward by Tasić 2001:44) that linguistic formalisation is necessary, but that ultimate formalistic reductions are impossible and undesirable. Heidegger also asserts that the subject (*Dasein*) is only the guardian of truth, and not its master as in Bouwer's idealism.

The second aspect is the psychological tradition which has focused on the private aspect. This aspect tries to identify meaning with an intrinsically meaningful mental representation of the logical form of the expression. The speech act school, for example, has focused on the view that utterances are actions. This implies then that they have consequences like other actions, and see meaning as stemming from these effects of

speech acts. The conflict of public and private is experienced in literary interpretation, for example, where it is not plausible to apply worldly truth conditions to the meaning of a rich and subtle text. On the other hand, an independent characterisation of the meaning of a text is needed to measure it against the author's intentions. Thus the meaning of a text is not whatever it was that the author meant, or a representation of the author's intentions (Barwise 1988:23-24; Tasić 2001:44).

It is crucial to realise that the meaning of a word is not intrinsic to it. It cannot be exhausted by the particular combination of words and symbols that constitute it. What adds to this is that, due to the growing complexity of social organisation, language continues to evolve as a method of imposing order on the entire society. As language is necessary for communication, it can be 'sold' as being morally neutral. Language is therefore turned into a most subtle form of ideology, and acquires the status of thé objective carrier of meaning. Language is turned into such a carrier by subjecting it to mathematics-like rules that are claimed to be unquestionable. It appears that individuals are trained to believe that language itself has an ultimate and unambiguous meaning all of its own. This meaning transcends all individuality, and the ego of the individual is prevented from perverting the meaning of language and turning it to the individual's own advantage. Such a false belief in the magical character of language is related to the quote by Bouwer, at the start of chapter 1 on meaningful information, that meaning does not magically spring out of language. To Bouwer language is an aid that makes social organisation possible, and language is not a creative act of individual will. Language is a function of the activity of social human beings. We could state it differently by putting forward that any creative and individual act cannot be reduced to language, whether as speech or writing (Dupuy 1980:12; Tasić 2001:47-48).

We indicated earlier on that writing was an inventive process in the sense that it created new types of knowledge, enabling us to overcoming the limitations of speech. Context can be preserved and reveal more about its history than the content of the writing itself. Text and context are important to content since it provides 'access' to its meaning. There seem to be at least three possible meanings when considering the relationship between meaning and content. The first is the sentence (or symbol) itself; secondly the event where someone uses that sentence or symbol to communicate something to someone

else (a specific action means something); and thirdly, whatever it is that the person conveying the information means or intends. These are all related as well as quite distinct. Meanings of sentences and symbols are associated with abstract objects and can be abstract themselves. It should not be understood, though, as uninfluenced by the particular circumstances within which sentences or symbols are used. The content is interpreted according to that which a particular event means. Also coming into play is the user's meaning. A performance of a particular play, or the representation in another format of a text, may have a common content, but may have different meanings depending on usage and circumstances. The understanding and interpretation of a text or play can also depend on the reader or viewer's informedness on the topic or theme covered. This often makes prior instruction of the reader or viewer essential, for the content to become real and manageable. The function of a text, or writing, like discourse, is not the maintaining of a single and exclusive meaning.

It is, in a much more exciting way, the maintaining of "*the simultaneous existence of multiple meanings*" (Foucault 1977:99). The written word has also made possible the residence of the imaginary and the fantastic in books. Fantasy no longer belongs only to the heart/emotional or to that which is out of place in nature. Dreams as well as true images can be in reading. Imaginary does not oppose and deny reality, but is a reality of its own growing among books and signs. Fantasy and imaginary evolves from the accuracy of knowledge and lie dormant in documents until 'discovered' by a reader. It is located in the domain of knowledge (Barwise 1988:25-26; Feyerabend 1988:158-162; Foucault 1977:90-91, 99).

Derrida is critical of the capacity of language to refer to anything outside itself, and the ability of language to represent a reality which is not always already a representation, or a supplement to writing. Writing is conceived in many cultures simply as a technical supplement to language, and an arbitrary representation of representation which distorts access to reality or the object itself. Such a conception does not allow for the contradictions necessary in the exploration of other possibilities, which then also excludes the possibility of knowledge, and the notions of truth and value, with which every scientific quest is invested. People do not have relations primarily with signs alone, but they have relations with others as well, including our relations with what we deem to

be totally other (also called the sacred) or strange. Differences and structures are necessary without privileging only the differences that make up a structure, or that of an imposed chronology. In such a way total defeatism is avoided in Derrida's deconstructionist approach, as differences also produce systematic transformations. Derrida is quoted in McKenna (1992:50) as saying: "Everything begins with structure, configuration, relationship." (McKenna 1992:45-50).

Distinguishing meaning structures are complex and ever-changing. For example, factors such as the mistakes humans make in interpreting the content of what someone says to another person. The speaker does not necessarily determine accurately the content of an utterance. An example is an author who does not honour his intentions by his actions, that is, there is a divergence between what the author meant and what the author said. Circumstances in which sentences/symbols are used or found, are essential in getting from the sentence/symbol to its content, especially because of the ambiguity of words. There exists different kinds of relations or constraints that underwrite meaning in general, and not just of language, but the meaning found in the world around us and how words relate to that world (natural and conventional). There is thus a relation between circumstances and content as being at the essence of meaning – this excludes the assumption that there are symbols and the thing symbolised or designated. The relation between meaning, content and circumstances indicates that the content a statement has, depends on more than the sentence used and the circumstances in which it is used. Additional to these factors are the shared conventions of a language community.

Central to this is change – conventions change over time, not necessarily in text or circumstances, but the shared conventions of a language such as English. Another factor is that the meaning of language involves consensus. Consensus can be achieved or enforced by training, but nothing can ensure universal loyalty of the individual to such a consensus. Such an individual can be forced to act according to the rule by imposing it on such a person. In spite of such scare tactics, what cannot be taken away is the spontaneity of an individual's interpretations of such rules. At most the ability to reinterpret could be suspended due to pragmatic reasons, such as the need to function as a social being. The processes of socialisation and culturalisation seem to constantly

put into question the absolute autonomy of the individual (Barwise 1988:25-31; Tasić 2001:48).

The tension between individual and societal aspects is especially visible in how words are defined, and how they are used and understood. According to Johnson-Laird (1988:99) “association is not a meaning. It is merely a link from one representation in memory to another: it leads from one thing to another. But their can be many different relations between representations, and the relation of denotation - from word to object - is only one of them.” This seems to imply that the meaning of an utterance depends on combining the meaning of its words in a way that takes the syntax of the sentence into account. It is especially this that seems to render most definitions of words incomplete. Definitions cannot express the complete meaning of a word, especially as words have consequences (Johnson-Laird 1988:99-104).

Ludwig Wittgenstein, according to Johnson-Laird (1988:106), noted that common components do not exist, or that the meanings of words cannot consist of a set of necessary and sufficient conditions common to all the things that a word can denote. At most, when looking at words, one will find not something that is common to all, but rather similarities and relationships. It represents an intricate network of overlapping similarities which will be either overall similarities or similarities of detail. The properties a word contains may serve as criteria rather than conditions. Criteria are characteristic components of meaning, and not necessary or sufficient components of meaning (Johnson-Laird 1988:100-107).

Writing, as a very concrete and visible medium, links to how we visually experience, present, and remember our multifaceted world. The human mind is a complex system with the ability to form images of the world. This world differs from one person to another, from one culture to the next. The way one thinks is influenced not only by one's culture and its related events, but also by the way these events are contained within such a culture. It is not only through reading and listening, but also through the visual image that ideas can improve knowledge and attribute to meaningful information (Boulding 1986:21-30; Feyerabend 1988:157-178).

4.4 Image and meaning

The power of the image has been successfully exploited by advertising agencies, political groups, and social welfare organisations. Something must be true, because we saw it on the news, or a photograph in a newspaper convinces us that something actually happened. Poster art, for example, had quite an impact on societal attitudes towards war and war participation during World War I and II, and the Vietnam incident. Trusting that information re-presented by the media is meaningful information seems to be unproblematic for the public at large, except when we look more closely at the varied letters of reaction sent in by members of the public. But then, the latter is written text, and is it any more trustworthy than the picture? Visual belief has, to a large extent, replaced the belief in something because we read it in a reputable source. Written sources also rely on the visual for impact and believability – the photographer 'was actually there' and his or her representation and angle of the event must therefore be a true reflection of the happening.

The visual image has a strong influence on the meanings attached to experiences, our world, interpretations, and language. The attempt to indicate the various attitudes towards the visual and the image, as well as the changes in these attitudes, is important to an understanding of the shifts in the consideration of what meaningful information entails. Vision, treated for centuries as the most noble of the senses, includes not only the actual physical observation with the eyes, but also internal mental speculation. Sight therefore occupied a privileged position in Western thought since the Greeks as the most trustworthy of the "*sensual mediators between man and world*"[9] (Jay 1986:176). The link to language are words and phrases that indicate the dominance of the visual contribution to knowledge, for example insight, perspective, overview, point of view, demonstration, synopsis and far-sightedness. To read texts, for example, sight is the privileged and necessary medium of access to its content and form. In modern thought, especially since Descartes (Jay 1986:176), mental representations have been favoured as mirror reflections of an external reality. Basic visual experiences formed an essential part of our

[9] 'man' to be understood as human being

attempts to make sense of the sacred and the profane. There is a definite link between vision and psychological phenomena.

The image seems to have replaced the 'word' as the primary source of information, and therefore of analysis. Why does this problem raise so much debate if the visual had always been dominant? The rise of modern science, the Gutenberg printing press and its resultant 'revolution', and emphasis on perspective in painting, afforded vision (the domination of the visual experience) an exceptionally powerful role in the modern era. This new preoccupation ranged from the discourse of sight, the emphasis on clear and distinct ideas in Cartesian philosophy, the enlightenment project, to the fascination with technical improvements in the capacity to see (eg the telescope, photography, cinema). This earlier obsession with vision has now taken a different turn. What has come under scrutiny are the implications of an over-emphasis of sight, also seen as a critique of the spatialisation of time. This position was especially brought about because of the over-mystifications of social imagery as well as the spectacle of late capitalist culture, including claims to a so-called disinterested scientific gaze. What seems to be taking place is the doubting of the long-standing nobility of sight, a paradigm shift in which the belittling of vision is replacing its adoration.

Even Merleau-Ponty, according to Jay (1986:178), whose phenomenological exploration of perception was part of this celebration of embodied vision, was suspicious of the Cartesian split between a distant, spectatorial subject and its object of sight, that is maintained in the more celebratory thinking on vision. The split between subject and object, or consciousness and body, is part of the reason for the advancement of perspectivistic vision which has a single point of view. A technological appropriation of the world is dependent on such a spectatorial split. Such a distinction is detrimental to locating positive meaning in embodied vision in the world since the intertwined nature of the visible and the invisible, the viewer and viewed, are ignored and shunned. Another drawback is the illusion such a split creates of picture versus text (Jay 1986:177-180).

The world-as-picture still challenges the world as written text. As a fundamental process in the representation of the world, the word then seems to have fallen before the 'terror' of the image. The image is not only a system of representation, but also a dominant

mode of interpretation, according to visual culture. It should be mentioned here that 'representation' is and should not be the only approach to meaningful information, especially since the sign and symbol, used to represent, can only be computated if stripped of its meaning. Foucault, according to Jay (1986:180), linked the modern view of insanity to the breaking up of the medieval and Renaissance unity of word and image. As a result madness has become spectacle, a thing to look at from the distance of reason, an enactment of unreason. Madness or insanity exists only as 'seen', and the science of mental disease developed as one of observation and classification allowing very little, if any, space for dialogue. It represents an intensified faith in visual evidence. Even the Cartesian advancement of internal vision to the detriment of the actual senses, are now being replaced by the supreme power of the empirical gaze. Foucault approached the visual, in writing, by employing the image to work through the idea of 'epistemes' or knowledges, ie units of meaningful utterances that cultures develop. The points of analysis he developed that interest us include the power/knowledge idea, and the process of meaning. Also important are the qualities of the visual and power – the idea of spatial realms marked by their visual otherness, is informed by a sense of the visual in culture (Fuery & Mansfield 2000:94-95; Jay 1986:179-82).

The power of the visual is indicated here, because the power of writing, especially when writing about the visual, has not diminished even though contemporary society is experiencing a dominance of the visual image. This can be seen in how the postmodern world, to a large extent, shapes our consciousness, culture, and ways of sense-making of our world, through visuals and rapid images. This critical movement indicates how visual cultures as a new, upcoming field of study in the new humanities, is expanding its critical rigour as well as marking its intellectual territory. Key to the development of this movement was the development of the analytical competence to address an increasingly image-driven world. Whichever contributions we consider, what remains important is "*counter-reading*" (Fuery & Mansfield 2000:90), that is, to read contributions in different ways, and to engage with traditional subjects of study, and address them in context of a different set of theoretical issues (Fuery & Mansfield 2000:88-92).

An additional understanding of image involves writing as a form and act of imaging – image and writing share qualities such as ambiguity, blindness, multiple meanings,

falseness, representation, origin, etc. To analyse the visual is part of the agenda of theorising in poststructuralist terms. For example, Barthes eventually translated his literary theories into the visual. Barthes distinguished between *studium* and *punctum.* Barthes described *studium* as a culturally derived image which carries an intentionality of the photographer and is passive; it is a wide field of unconcerned desire, of various interests, of inconsequential taste; it is the order of liking and not of loving. The *punctum* is the creative drives that the viewer brings to the image; it is the disruptive point in the photograph, it stabs at and disrupts the viewer; and it is a detail that, for a particular viewer, arouses interest, and is often beyond morality (Fuery & Mansfield 2000:95-96).

Some of Derrida's writings engaged with the image, and photography. By investigating issues in painting and aesthetics, Derrida worked through and against key Western philosophical thought. Examples are representation and reality, the artist as creator, and the role of the spectator. He links the text to the visual, through the analogy of the frame and the *passe-partout* or mounting in art. Derrida pursued the hermeneutic processes of frames as they shape how we produce meaning. Of interest is that which is neither inside nor outside the painting, or the subliminal space of the between, because it signals everything that is different from the included and excluded. Thus, text is seen as all-encompassing: matters of textuality and reading are translated into the issue of the frame. It also looks at how the frame operates in the formation of the aesthetic. Related topics include creativity and blindness, the relationship between blindness and its causes and effects (eg love, punishment, religion), self-reflexivity, and blindness and insight (Fuery & Mansfield 2000:96-97). The different levels of meaning will contain a variety of meaningful information. Or, different levels of possibilities exist within which we may find, create and apply meaningful information. Not even the frame or set boundaries and its own 'outside' are excluded as possible sources.

Baudrillard's work of writing had a major influence on the theorising of the image in postmodernism. Baudrillard argues that everything is *simulacra*, and that there is no original point or perfect form from which all else is copied. This runs counter to the tradition in Western thought derived from Plato. Postmodernism, for Baudrillard, represented a different kind of real, that of the hyperreal, or a world of unending copies. "*At the limit of this process of reproducibility, the real is not only what can be reproduced,*

but that which is already reproduced. The hyperreal." (Fuery & Mansfield 2000:98). For Baudrillard the hyperreal leads one to question not only reality as it is formulated and represented, but also the notion of artifice. To question the tradition of the real and the authentic, meaning itself is being questioned. The meaning we attached to things and life due to the influence of realism, rationalism and ultimate truth, can especially be found in traditional, and later variations and versions of, writings on aesthetics. Visual realisations of whichever key way of thinking (philosophy and natural science) is dominant at the time, can almost always be found in the arts, and all other creative expressions of ourselves, others, and the world.

4.5 Aesthetics and meaning

Separating this paragraph on aesthetics from that of the previous one on the visual image may seem artificial, because traditional aesthetics tend to prejudice the fine arts and the visual sensory experience. There are always overlaps when meaning-structures are involved, and it is necessary to consider the ways in which aesthetics is defined and applied.

Many definitions of aesthetics are problematic as they tend to be circular in nature, for example, defining aesthetics as that which is concerned with the aesthetically pleasing, etc. Definitions also demand criteria of application, that is, justifying the use of the term to a particular object. A definition also has necessary and sufficient conditions that must be met for the concept to be applied to a specific object or event. Defining aesthetics and justifying its use in a particular situation or as relating to an object, is not that straight-forward. The school of thought that is one's point of reference will determine, for example, whether one views the aesthetics as something that is objectively beautiful or ugly, or something that is in the eye of the beholder (subjective). An aesthetic object could be seen as only that which is truly representative of the objective world and truth, or an object is seen as beautiful only if it evokes an emotional reaction. Other approaches of conditionality is that the aesthetic object expresses its creator's ideas, but is not sufficient reason to regard an object as, for example, a work of art. Perhaps it has no external point or function at all, or its justification is not in the object itself but in the

response that it causes. We may, when having to justify why we hold something as beautiful, struggle to separate aesthetic considerations from moral ones.

When proceeding to consider a few definitions, we need to remain aware that these definitions are never final or complete interpretations. The idea here is not to offer any one possible definition, but rather to focus on the influence of an aesthetic approach on meaning. It includes the approach of modern aesthetics which emphasises the form-content relation and the role of context (extrinsic). It recognises that the aesthetic object is not produced in a vacuum, no matter how ‘new’ or original its creation may seem (abstract). The latter, of course, is based on the point of view that an aesthetic object is necessarily a human creation, and a natural occurring object may be aesthetically pleasing even though not perceived as an aesthetic object.

According to *Chambers 21st Century dictionary* (1996, sv 'aesthetic', 'aesthetics', 'beauty'), and *The New lexicon’s Webster’s dictionary of the English language* (1990, sv ‘aesthetic’, ‘aestheticism’, ‘aesthetics’, ‘beautiful’, ‘beauty’), aesthetic is derived from a Greek word meaning 'to perceive', or that which is perceptible to the senses. Aesthetic is the ability to appreciate beauty, and aesthetics is the part of philosophy concerned with the study of the principles of beauty (ie, the perception of the beautiful as distinguished from the moral and the useful). Aesthetics, therefore, deals with the sensations and emotions evoked by beauty. The idea of aesthetics, or the concept of beauty and taste, is an ancient one discussed by the Greeks in relation to the nature of beauty (and which is still a strongly contested matter). The term itself, though, was coined by Baumgarten in the eighteenth century and developed further by Kant. As the term aesthetics was derived from a word meaning sensory perception, it indicated a shift from things to a perception of things, from the objective to the subjective in sensory experience. A philosophy of aesthetics asks questions such as whether qualities are objective or subjective, whether objects are beautiful or ugly independently of minds and the judgements they make, or whether objects (beautiful or ugly) are so only because minds judge them to be so (beauty is in the eye of the beholder). Questions are also raised as to whether we can make aesthetic as well as moral judgements at the same time, and whether emotions should come into such judgements.

The extreme aesthetic view in which there is an inordinate concern with aesthetic matters as opposed to ethical or practical considerations, is called aestheticism. Aestheticism was also a British arts movement from the 1880's to the 1900s. This movement held that works of art should exist and be appreciated for their own sakes, without outside relevance or meaning. Kant, on the other hand, already in 1790, argued that aesthetic appreciation reconciles the dualism of theory and practice in human nature. Kant's ideas made it possible to identify beauty as a subjective quality which is not necessarily inherent in the aesthetic object (eg a work of art) (*Key ideas in human thought* 1993, sv 'aestheticism, 'aesthetics'). Beauty is defined as that which is pleasing to the senses and exalts the mind, and also refers to excellence, strength or quality, and admiration. The part of the definition of beauty that seems to oppose that of aesthetics, is that beauty is also defined as those qualities pleasing to the moral sense. That which is beautiful concerns not only that which is physically lovely, but also that which is morally or intellectually pleasing. Traditional aesthetics is often associated with the interpretation of art (including works of art, literature, music, painting, theatre), but as we shall attempt to indicate in this chapter, much of our aesthetic experience includes nature. It also acknowledges the role of a scientific understanding of nature, thus allowing for an appreciation of the totality of our experienced worlds. Our environments or surroundings constantly engage our senses. (*Chambers 21st Century dictionary* 1996, sv 'aesthetic', 'aesthetics', 'beauty'; *Key ideas in human thought* 1993, sv 'aestheticism', 'aesthetics'; *The New lexicon's Webster's dictionary of the English language* 1990, sv 'aesthetic', 'aestheticism', 'aesthetics', 'beautiful', 'beauty').

One of the contexts of aesthetics we are looking at, is an unlikely place where most people would not consider the aesthetic and the beautiful to be present. It is aesthetics in science and will be illustrated by referring to three main examples found in Tallis (1995), ie Copernicus, Newton, and Einstein. It is the role of imagination in science, or the extent to which science is driven by it, that can be seen in the work of these three thinkers and scientists. The first example is the heliocentric theory of Copernicus which was aesthetically motivated, as well as Kepler's adoption of Copernicus' theory: "*As I contemplate its beauty with incredible and ravishing delight, I should publicly commend it to my readers with all the forces at my command.*" (Tallis 1995:18). The second example is the seemingly forgotten preoccupations of Newton with alchemy and theological

concerns. Behind his intuitions that made the achievement of his Laws of Motion possible, were quasi-theological notions about the nature of space and time, eg his vision of space as God's mind.

Newton was also aware of undiscovered worlds and possibilities: "*I do not know what I may appear to the world; but to myself I seem to have been only like a boy playing on the sea-shore, and diverting myself in now and then finding a smoother pebble or prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me.*" (Tallis 1995:18). The third example is the genius of Einstein which has often been portrayed as residing in his powerful aesthetic sense. His greatness which was his ability to invent invariance principles and make use of statistical fluctuations, is rooted in an intense and unwavering intuition of, and belief in, underlying order and of the beauty of that order. This is what enabled Einstein to develop the Special Theory of Relativity, and later, with equal intensity and input, the General Theory. To many scientists beauty is to be found or perceived in ordered systems, a harmony of logical rationality and a harmony of aesthetic achievement. The three examples of Copernicus, Newton, and Einstein reflect an excited intuition traditionally associated with the intuitionist Romantics, such as Bouwer (referred to in ch3). It is an intuition of order and beauty as an essential condition of great science, including great experimentation and great discoveries, because of an excitement and passion for the incredible secrets that the world and life holds and of which we can only hope to imagine a glimmer (Tallis 1995:17-19).

This beauty found in order is not far from the identification, enjoyment and appreciation of the formal properties of art. It has in common the idea of universal human consciousness, and is opposed to that which is conventional, taught, and culture related. This approach of excluding the conventional has been opposed, according to Tallis (1995:157), by *Gestalt* psychologists. They attempted to relate aesthetic principles to the fundamental properties of the human mind and to identify an aesthetic element at the heart of perception itself. As we have seen in the definition of aesthetics, the Greek word *aisthētikos* means 'perceptible to the sense', 'perceptual', 'perceive' (*aisthesthai*) (*Encarta concise English dictionary* 2001: sv 'aesthetic'). The basic level where we complete an object that is only partly visible or where the next step in a series of sounds is anticipated (such expectation is shaped by the past), is perhaps where consciousness is instinctively

aestheticising. A sense of form can assist in separating ordinary and meaning-filled experience from a confusion of sensation (Tallis 1995:157). From this we can appreciate the necessity of form-finding and unification in consciousness to be able to transform sensations drawn from different senses into the perception of an object. These different senses can be brought together into an experience of a world, or a sensible world, through the production and perception of form. General or formal features allow us to recognise objects, and to identify larger spatial and temporal arrangements. It is to theorise in ordinary consciousness and is needed for art to be enjoyed and produced.

External factors to a work of art, for example the time it was created in, the medium used to create it, and the frame (if a painting), supply information that grounds the work of art and draws attention to it as an aesthetic object. Information external to the work of art may even determine that it was created purely for its own sake and not for, say, ideological considerations. The danger in the approach of the *Gestalt* psychologists is that it seems as if the aesthetic sense associated with the production and reception of art is not so special after all. Ordinary sense experience is so rich in forms, that it is available in excess. Yet ordinary consciousness falls short when it comes to uniting all these many physical experiences with the larger forms of wholes, structures, and unities derived from knowledge. Tallis (1995:159) refers to it as the “incomplete experience of experiences.”

These immediate experiences of perceived objects are not sufficient for memory and anticipation, because it is not sustained but fragmented and its form short-lived. To use art as an example, art is seen as concerned more with the larger, explicit and stable forms than that experienced in everyday life. Art brings together that which would otherwise have been dispersed, offering a synoptic view denied in everyday experience. It includes more autonomous forms of art, such as abstract painting and music. Art, though, is about more than its formal qualities. The reason is, besides it not being created in a vacuum, the variety of purposes and instruments in art. This is related to certain main trends in aesthetic theory, ie imitation, expression, form, and beauty. These theories are not distinctive properties of works of art as they cannot easily be separated (Tallis 1995:158-160, 169).

Representations of objects surround us constantly in our visual field. Representation, to be able to sharpen consciousness, needs to collect into the object or event its implicit significance. This may be achieved by transforming the object to make it more evident, or to make the object stand for a whole class of objects. According to this, one cannot claim that art is totally different and separate from everything else in life. Art is rooted in ordinary experience and non-artistic activities, even though these do not have any necessary connection with art. A perception of beauty outside art is needed for the creation of beauty within art, and art makes that beauty explicit. It seems that our conceptions of art are as narrow as the boundaries of our cultural presuppositions. These are determined by the fact that the idea of art and the associated ideal of beauty is relative to certain cultures, including the assumption of beauty as an ideal.

One of the strongest challenges to the traditional or classic and romantic approaches to art, was the Avant-garde movement. This movement cast doubt on the accepted rules that determined the representation of the figure in space, the organisation of colour and values. Previously the figure, space, line, colour and frame were subject to the constraints of representation. In many cases this is still so. It was also the recognition that something called indeterminacy does exist. Cézanne, according to Lyotard (1994:284), saw the colouristic sensations as constituting the “entire pictorial existence of objects.” It leaves out of consideration the history or subject, line, or space, and allows for attempts to render perception at its birth.

Part of the unhappiness of the Avant-Garde with the state of art in the nineteenth and twentieth centuries, was that those elementary sensations are hidden in ordinary perception. It will remain hidden as long as our perceptions are under the hegemony of classical ways of looking, also called prejudiced vision. As we have indicated before, the artist, through the work of art, can re-establish the sensations and make seen what makes one see, and not what is visible. The avant-gardes brought into doubt the constituents we accepted as elementary or as the origin of art. Avant-Garde asks whether something happens, and is not concerned with what happens to the subject, and for Lyotard, this is the sense in which it belongs to the aesthetic of the sublime (Lyotard 1994:284-286; Tallis 1995:170-192).

We have referred to the fact that art is the typical focus of aesthetics and its definitions. We have also indicated that our aesthetic pleasures and appreciations are not limited to art, but to the world around us such as our neighbourhood surroundings (parks, marketplace), and nature (sunsets, horizons, mountains). There is an approach called environmental aesthetics that specifically considers the environment as part of our aesthetic appreciation of our surroundings. The aesthetic object under consideration is not in our world in this case, but rather forms part of the world we are in, ie we are immersed within the object of our appreciation (Carlson 2000:xvii). We change our relationship to the object of appreciation because we constantly move within it, thus changing the object itself as well. Our experience of the environmental object involves all the senses (sensory perception), that is, our experience of it is personal and total, and not stable and self-contained at all. It is the fragmented and continuously changing experiences we referred to in the previous paragraphs, that is given form in a larger structure through a work of art. In this case, however, the environmental object remains unframed, except maybe, after our initial experience of it, it is given a more constant form by our memories and knowledge. Another aspect that is different from traditional aesthetic objects, is that the latter are human products, whereas environments seemingly have no design, or rather, human design.

Environments change, grow, and develop by natural processes, and even with the involvement of a human agency (human-altered environments) its unruly characteristic cannot be cancelled. We seem to be confronted in the world at large by an aesthetic appreciation of something that envelops us, that is constantly in motion, confronts us in our daily experiences, that is not limited by time or space, and is constrained neither in its nature nor its meaning. Similar to traditional aesthetics, environmental aesthetics also has two basic orientations. These are subjectivist (sceptical) and objectivist. The subjectivist orientation holds that, since we lack the traditional resources of aesthetic appreciation, we cannot answer questions such as what to appreciate aesthetically and how to appreciate it. One can either accept that it is not possible to aesthetically appreciate environments or that such appreciation does not exist as true aesthetic appreciation. One can decide, on the other hand, that the only way to achieve aesthetic appreciation of the environment is to open oneself to being immersed, respond to it and enjoy it. It becomes less important whether such an experience is aesthetic in the strict

sense of the word (not that it is any clearer in the arts). The objectivist point of view addresses the what and the how questions by making use of two sources. These are the appreciator (designer) and the object (design) of appreciation. When confronted by an environment the appreciator, similar to the artist or designer, selects the senses relevant to its appreciation, thereby setting the frames which limit or fix it in time and space. The nature of the environment provides the design whereby we can fashion our initial overwhelming experience of that environment into aesthetic appreciation. The nature of the object experienced guides our appreciation of it.

To render this aesthetic appreciation complete, we need information about its nature, type, properties, origin, etc, for a whole or fuller appreciation and understanding of what makes it pleasing or even awe-inspiring. We can now frame the experienced environment with such knowledge and understanding. Such knowledge also allows us to adjust and enlarge our frames, depending on the environment in question, for example in appreciating human-altered environments (eg modern architecture). The subjective and objective orientations are both recognised as they indicate problem areas or questions in environmental aesthetics. The scope characterised by both orientations, is the following. The first continuum is the subject matter that stretches from pristine nature to the limits of the most traditional art forms. This includes wilderness areas, rural landscapes, the countryside, cityscapes and urban design, shopping centres, architecture, etc. The second continuum in characterising environmental aesthetics, ranges over size. It ranges from the most engulfing environments such as old forests, a big city, or an immense field of wheat, to the smallest and intimate environments such as the backyard, office, living room, turning over a rock, and even an environment viewed with the assistance of a microscope. The third and last continuum is related to the second continuum. Its range includes the most ordinary to the extraordinary, the mundane and the exotic. Environmental aesthetics is not only about the spectacular, but includes commonplace sights, daily experiences, ordinary scenery, etc. This approach accentuates the possibility of every environment offering much to aesthetically appreciate as it is rich and rewarding (Carlson 2000:xvii-xxi).

It is within such environments or worlds that people live, and which influence and shape their understanding, pleasures, experiences, as well as their meaning-making activities.

Space and time have been seriously altered, and are still changing rapidly, in society. In our discussion of the information society, Wersig's (1990:191) view on the aesthetic potentials of human beings were accentuated as an important and necessary companion to the potentials of calculus. The potentials of aesthetics, for example, phantasy, play, wonder, happiness, mental images, and illusion, are under-utilised or even ignored and suppressed in a society where a scientific model of rationalisation is dominant. A strong, mechanistic world view instead of a more human and balanced view, had a definite influence on power relations.

4.6 Power and meaning

Power is to be understood as not only meaning that which is institutional, organisational, or communal. We need to recognise the more subtle levels of power, because the more subtle characteristics of power may in time infiltrate, distort, change, and even overthrow the more obvious and visible power structures. This paragraph on power relates to the information society and how power can shape the way we configure meaningful information. Whether structural or subtle, power in society forms part of individual as well as societal or communal relations. It therefore includes external as well as internal power structures. If power as a concept is not understood, it will not be possible to understand what a society is. Incommensurable understanding of the meaning of power is detrimental to interpreting and comparing conflicting views on what society is or ought to be. Another consideration is that the different and often conflicting conceptions of what power means, are situated within different schools of thinking and contexts. It also depends on the time-frame it is conceptualised in and by whom. Thus, the different conceptions of what legitimation and power mean, influence debates on what social forms of power are legitimate.

Michel Foucault (Hoy 1986:123) approached the problematic character of these concepts by rethinking the concept of power in terms of its connection with the social forms that knowledge takes. Even though Foucault's notion of power was not traditional, it has factors in common with, and can be compared to, traditional social theory. In the social sciences the concept of power is not a settled one because of the different social scientific models making use of different conceptions of power. Findings will therefore

differ and it is impossible to determine in a neutral way which model is more correct. In this respect the social sciences are relativistic, and there will always be endless disputes about the proper use of basic scientific concepts. The definition of concepts seems to be tied to unacknowledged value-assumptions which predetermine the range of their empirical application. According to Hoy (1986:124), there are many philosophers of science who do not believe that the sciences conform to the traditional empiricist conception of scientific method. In the social sciences choice of theory is also more relativistic than in the natural sciences. The reason for this is that the principles used to select social theories are guided by a variety of values. In other words, the evaluation of data does not rely on the pragmatic criterion of predictive success as it does for an explanation by a natural scientist (Hoy 1986:123-125).

Lukes (Hoy 1986:125), in his radical view of power, distinguishes between subjective and real interests, and a related difference between observable (overt) and latent (covert) conflicts of interests. Observable conflicts are those that can be acknowledged by those involved in the conflict, and latent conflicts are those that would not be readily admitted due to ideological distortions of the perceptions of the real interests of those involved. Conflicts of interest can, therefore, be not only overt but also covert, and both can be studied. Lukes criticises these approaches for being too behaviourist. They limit observations to actual behaviour and conscious decision-making processes. The other limitation is that it pays attention to only one dimension of power, that is the exercise of 'power over' an individual, social group, etc (Hoy 1986:125-127).

Other ways of looking at power as concept are those of Bertrand Russell (Hoy 1986:127) defining power as the production of intended effects, and of Karl Marx (Hoy 1986:127) seeing power as not reducible to the intentions of individuals – history may happen as a result of individuals' wills, but not as they will it. The debate is therefore between those who view power as exercised by individuals or institutions, and those who see power as a result of structural factors within systems. Theorists such as Weber, Parsons, Lévy-Strauss, Althusser, and Marx (Hoy 1986:127) all stress structure rather than agency. Marx, for example, sees the economic structure of society as independent of and not reducible to the agent's willed intentions. This, however, does not mean that structuralists are necessarily determinists, or that the agent is ignored or not accounted

for. It is a 'power to' rather than Lukes' 'power over' that is the main difference, and should not be seen as a lack of attribution of responsibility for certain consequences. The controversy is about free will and determinism, and not necessarily whether structural systems or human agents should be used as the basic explanatory units.

Foucault (Hoy 1986:128) worked out a method for the historical study of power without leaning on the concept of the subject or on the assumption that the structural relations are not subject to change. Foucault postulates power as intentionality but without a subject – power relations seen as intentional can be described without attributing it to specific subjects as their conscious intentions. *Power*, then, is an explanatory concept, while keeping in mind that not all explanations are causal. Foucault, through avoiding the attribution of power to either conscious agency or to underlying forces (eg modes of production), attempted to explain contemporary society by mapping the network of power relations that have evolved historically.

Yet, agents are not ignored as Foucault also pays attention to the exercise of power as well as acknowledges that power cannot exist if it was not exercised by agents. Foucault does not view power as something that can be possessed by those exercising it. Thus, power is always exercised, never possessed, because it is not a property, privilege, or possession – something the dominant class has and the dominated not. Power is a strategy, a network of power relations and social matrix of which the dominated are as much a part as the dominator. Power, then, is not manifested globally or represented by and located in the sovereign. Power is diffused through society, which is the reason why take-overs of the state apparatus do not change the power network. To live socially is to be involved in power relations, yet it does not imply that power is everything (Hoy 1986:127-128, 134-7).

Those supporting Marxist ideas, tend to view power as repressive, thus in a negative sense, and render power a fragile concept by exaggerating the notion of repression. Those supporting the ideas of Nietzsche think of power as producing negative as well as positive effects. Power can also be positive and productive, and is not always repressive. It is sometimes also enjoyed and not necessarily suffered. Foucault sees power not as preventing knowledge, but as producing it; and finds, therefore, that

reducing the mechanisms of power to the level of repressions (eg exclusion, censorship, blockage, domination, authority, manipulation, coercion) is inadequate and dangerous.

Focusing only on the negative aspects of power makes it impossible to explain how the kinds of knowledge needed for controlling the human body and labour power have emerged. Foucault aimed to show, through history, that the human body could have been constituted as labour power only if a technology or a knowledge of the body existed, making it possible to organise and subjugate bodies into docile, useful roles. Yet the technology of power does not causally determine particular actions, but only makes them probable. No given remains constant as it is transformed over time by various technologies of power. Knowledge cannot be 'emancipated' from power relations. This in a way links with the reification of relations to others (human bodies) and our experienced world. The subjugation or domination referred to should not be interpreted as meaning something imposed on one class by another. It is more than that, as it is something that increasingly penetrates and characterises all aspects of society. Foucault calls it the process of normalisation, which is the growing rationalisation, organisation, and homogenisation of society in contemporary life. This is detrimental to action, which is discouraged as it may lead to uncontrolled and unforeseen consequences. Waiting until one possesses a total understanding before engaging in concrete action, one will never go over to action.

Another problem is that contemporary society seems to view progress as the break from the repression of power, as if freedom is the antithesis of power. Foucault argues that history is full of events that do not fit into the materialistic account of the 'progression' of history and that things are getting 'better.' (Hoy 1986:130-137; 144-145). A materialistic approach in society will necessarily bring about a more materialistic interpretation, representation and configuration of meaningful information. This is especially visible in the information society and the myths surrounding it. The chapter on the information society as a milieu for meaningful information, focused on the paradox of us having so much more information at our disposal, but at the cost of meaning.

Swan (1988:25) warns of a world so caught up in the idea that information is our salvation, that it has become the only real medium of exchange, a kind of madness, our

madness. Such a fanaticism is not about our use of information technology, but our relationship to the information being processed. Swan offers the following quote by Boorstin (Swan 1988:26): "*While knowledge is orderly and cumulative, information is random and miscellaneous. We are flooded by messages from the instant-everywhere in excruciating profusion.* [...] *information tends to drive knowledge out of circulation .... The latest information on anything and everything is collected, diffused, received, stored, and retrieved before anyone can discover whether the facts have meaning.*" Focusing on information to the exclusion of everything else is detrimental to the configuration of meaningful information. Knowledge remains powerful in such a configuration.

It is therefore necessary to consider the relation between knowledge and power. In terms of will-to-power, the central hypothesis of the explanation of phenomena is that knowledge is power. The connecting 'is' does not mean that the relation of knowledge and power implies that knowledge leads to power. The relation is rather one where knowledge is already a function of human interests and power relations. Knowledge is not gained prior to and independently of the use to which it will be put in order to achieve power. Nietzsche identifies the will-to-knowledge with the will-to-power. Foucault calls it power/knowledge, the slash indicating that knowledge and power should not be studied separately as the two concepts are not readily distinguishable. Nietzsche claims that the will-to-power is a hypothesis or interpretation rather than a fact; and Foucault's power/knowledge is a heuristic device or pragmatic construction to be tested in terms of its value in reconstructing the history of the sciences of humans and of society. It is a historical project aimed at studying the social and scientific practices that underlie and condition the formation of beliefs. The immortality of knowledge as a truth-gaining enterprise is seriously questioned, bringing into doubt the finality of any successive rebirth of the truth ideal. The historical project is a way of interpreting how knowledge and power has come to be counted, not whether such knowledge is ultimately true or not. The latter epistemological question cannot be decided in a context-free, unhistorical way. This relates to Lukes' (Hoy 1986:130) position that historians or social scientists who may use similar data, but rely on different conceptions of power, will necessarily reach different and even competing understandings and explanations.

The way in which such data is interpreted will depend on the practical interests of the interpreters, questioning the view that texts, for example, have stable, permanent and inherent meaning. A postmodern doubt is thus that the narrative offered by knowledge is not the only story that may be told of events. To the modernist all phenomena are explicable, eventually, implying that for events that do not have a convincing and agreed narrative, it is because the kind of knowledge available at that time cannot as yet offer such a narrative. Texts can and will have subtleties and contradictions that resist one-dimensional interpretations, and texts do have meaning. Objective truth and verifiable knowledge exist within the complexities of the world and human nature. Objectivity becomes less certain, especially in political power struggles where the neutrality and objectivity of the legal system, for example, is attacked or praised depending on the purpose and occasion it needs to serve (Bauman 1994:289-291, 293; Hoy 1986:129-130; McCormack 2001:31,33).

A mechanistic and strictly objective world view, similar to its effect on power relations, also influenced approaches to madness (also a kind of power relation). That which is considered strange and outside the acceptable parameters (for example behaviour) set by a scientific pattern of rationalisation in a society, must either be cast out, isolated, adapted (eg using suggestion, convincing, reasoning, force, education), or destroyed if neither option of isolation or adaptation is successful in removing or changing the stranger (eg ideas, ideology, person, concept). A very good example of how society deals with the unacceptable, unknown, even the fearful, is the history of actions employed to deal with madness and its manifestations.

4.7 Madness and meaning

The treatment and understanding of, and solutions to, the phenomenon of madness through the ages by society tells us quite a bit about how people view themselves and their existence with others in the world. Our universe of knowledge is ever expanding and one would expect us to be aware of the fact that madness is about more than the psychiatric understanding of madness as a disorder, an illness. In our contemporary society we find just such a view dominant and practised as justifiable, reasonable action. This renders our world views simplistic and very one-sided. We are left with a

materialistic approach which ignores, or forgets, that it is in madness that we find alternative truths on society, other ways of reasoning and knowing. Madness and unreason supplement (adding to, as well as filling gaps) reason, and does not oppose it in the sense of a dualism. Derrida's deconstruction[10] is important to us, as it assists us in approaching such dualisms, or oppositional approaches, typically found in traditional Western philosophy (Reynolds 2002). In our discussion on Bernard Tschumi's *Le Parc de la Villette* (the *Folies*) we will see how the hierarchies and orders of secondary value (ie one end of a dualism, eg reason and unreason, is regarded more desirable and valid than the other) are interrupted. Deconstruction pays attention, or lays bare, differences and similarities and the underlying meanings not apparent at first, including alternative meanings. Madness is about excitement, the irrational, folly and unreason. Or, rather, that which seems to fall outside the boundaries of traditional or modernistic views on what knowledge is, and where it comes from; and how we find and create meaning in information that is around us, or supplied to us. Madness is not just a representation of alternative truths to and knowledges of our accepted institutionalised meanings, it ís those other truths and knowledges and meanings. Madness may be defined as rash or thoughtless behaviour, but it is not less meaningful than some rational, thoughtful or logical behaviour. This behavioural part of the definition is part of the reason why madness and action receive attention. Madness can also be considered as another expression of power, especially since one definition of power is that it is the ability to influence or persuade people's judgement or emotions.

Foucault traced the changing perceptions and definitions of madness from the Renaissance into the Age of Reason, and to the institutional practices of the eighteenth and nineteenth centuries. What is interesting about such an investigation, is that it lays bare the transformation of ideas about madness initially being an accepted

[10] It is important to remember that ‘deconstruction’ refers to Derrida’s philosophy, and ‘Deconstructivism’ to an approach in architecture.

accompaniment of social life, and was often viewed as inspirational and creative. This mutated into a focus of psychiatric intervention and institutional administration, thus, it has been removed from social life and hidden away. Perhaps it is easier, as Bauman (1994:292-293) suggests, to assume that someone with unshared beliefs, beliefs that differ from the offered norm, are symptoms of mental disturbances. Such an assumption is much more reassuring to deal with than to face the possible acceptance of the possibility that the world's truth is one of many other such truths. A last line of defence is the verdict of insanity and imprisonment. The mad has been marginalised and seen as a danger, losing status as "*literal and metaphorical wanderers in the social landscape*" (Fuery & Mansfield 2000:180). They are subjected to policing and medical intervention according to theories of moral, physical, or sexual normality. A new institution came into being, the asylum, and a new type of knowledge, known as psychiatric knowledge. Lacan (Ulmer 1990:162) attempted to remove the separation, brought about by the Enlightenment, between science and madness, and to bring them together in one discourse. It is the natural language that the science of the Enlightenment tried to eliminate entirely from the discourse of knowledge. (Fuery & Mansfield 2000:94-95; Ulmer 1990:162).

Of great importance in Foucault's (1965:v) approach to madness, is the reconsideration of folly as the complex social phenomenon it was, and still is. It is an inseparable part of the human condition, another image of who we think we are. The contribution by Foucault highlights two important aspects, which is also symptomatic of other theories and their developmental stages. The first aspect is that it sheds light on historical developments, such as the sudden discontinuity between the Renaissance view of madness as an alternative insight and imagination, but also as death of the mind, dreading folly as much as they admired it; and the Classical view (eighteenth century) of madness as unreason and therefore external to any meaningful way of understanding and communication (a form of silence). This is pretty much how we seem to approach most things we do not understand or cannot explain in a rational manner, or rather, we rationalise its existence away. The second aspect is that the historical processes are laid bare that made the co-ordination of institutional practice and scientific knowledge a highly important factor in modern life. A consideration of madness is about the actions that divides madness, or established the distance between reason and non-reason. Madness

as the manifestation of the soul, became known as the unconscious part of the mind due to the influence of Freud. There is no more communication between the person of reason and the person of madness because of societal conformity to a language of reason which silenced madness. Conformity is a relinquishing of power for a focus on limits rather than on identity. (Foucault 1965:xi-viii).

Both aspects of the historical developments identified by Foucault (madness, and institutional power) are powerful forms of knowing and action that is reflective of the characteristics of society. These characteristics, especially in the information society, seem oppositional and mutually exclusive. The distrust in action, especially action of the unpredictable and unsanctioned kind, also led to the twentieth century obsession with locking away, marginalising or institutionalising of that which represents madness. Madness, as indicated, is less about psychosis, and more about what is feared as alternative ways of knowing, of having truths and understanding meaning. Madness also serves as an example of how our configuration of meaningful information is influenced by the era within which we find ourselves. The dominating ideas, oppositions to these ideas, and available knowledge of such an era are just some of the influences on our experiences and understandings of our environment.

The following paragraph is an example of how folly or madness is used to cross traditional and classical rules of composition for time, space and function in architecture, as well as allowing space for disjunction and a kind of contamination of ideas by traditional opposites. It affords the configuring of meaningful information more freedom while still allowing for boundaries. In the chapter on information science we will show the value of the grid employed by Bernard Tschumi for the subject field.

4.8 *Le Parc de la Villette* (the *Folies*), Paris (1984-90) of Bernard Tschumi

Bernard Tschumi's[11] project *Le Parc de la Villette*, an architectural artwork, is one of his experiments in Deconstructivist architecture (called 'Deconstructivism'). The project draws from the theoretical fields of architecture, psychoanalysis and the philosophy of deconstruction of French philosopher Jacques Derrida; and it also serves as an example of psychoanalysis overcoming its borders, allowing its external and internal aspects to intermingle. Tschumi aimed to free madness, or *folie*, and confrontation from their original historical (theoretical and institutional) connotations by placing them on an abstract plane to allow for new meanings to emerge. This allows for new meanings to be received and formed (Ulmer 1990:164; Tschumi 1998:173). A free space is created in effect to allow for open debate and collaborative research (Ulmer 1990:164-5). *Le Parc de la Villette* illustrates the contemporary situation of disjunctions and dissociations between use, form and social values. This disjunction suggests an interchangeable relation between object, movement and action, and a contamination of form which breaks with the more traditional classical rules of composition. The balanced relationship between forms is placed in conflict, effectively disturbing its unity.

Tschumi also shows through the project that theory cannot be reduced to its own practice (Steele 2001:202-203; Tschumi 1998:175-6). The deliberate disturbance of balance and the expected by disjunction and contamination, places Tschumi firmly within Deconstructivism (architecture). The generally accepted and applied values of "*harmony, unity, and stability*" (Steele 2001:203) are challenged by the acceptance of flaws as part of the structure. Tschumi questioned the validity of architecture reflecting stability, balance, harmony, and continuity, when the world within which architecture is located is characterised by dissociation (separation, distancing, decay) and the destruction of unity. Architecture needs to reflect this world within which it finds itself as it exists only through that world (Tschumi 1998:176). The eclectic excess of styles we witness in Post-Modernism have, according to Tschumi, removed meaning from architectural language. Refer to the Appendix (Plates 1 – 8) for examples of some of the *folies* or points brought together in a system of relations afforded by the point grid.

[11] Swiss-born, American-based architect (Steele 2001:210).

This adds another level to Dupuy's assertion that increasing amounts of information result in a decrease of meaning. For Tschumi an excess of meaning has no meaning. The key to this lies in his question: "... *how can meaning be produced when signs only refer to other signs; when they do not signify, but only substitute*?" (Tschumi 1998:176). Signs are variables and form a constant. Form can be identified and therefore contains meaning, but does not know more than it can express. In Tschumi's words "*Form is the knowledge of being*" (Tschumi 1998:177).

The plans to *Le Parc de la Villette*[12] reveal relations that produce invention and innovation. Invention is only possible when seemingly unrelated ideas or forms are brought together in unexpected ways (Ulmer 1990:165). We shall see this when we consider what Information Science is and could be all about, not to ensure its survival but to ensure its continued creative, adaptable and active existence. The La Villette project is not about cause and effect relations. The oppositions between, for example, form and function, structure and economics, are replaced by superimposition and the disentanglement of conventions, concepts and the relation between architecture and its historical dependence on existing theory. The play or relation between function/use and form/style is opposed. It is a confrontation with the outside or external world and objects of architecture.

Tschumi has an alternative way of delivering knowledge to problems and relating matters to each other. Instead of using reason, rational argument and authentic evidence to solve problems, he designs an alternative called 'madness' (*folie*). This is made up of combinations and permutations among various categories (eg space, event, symbol, technique) of analysis. (Ulmer 1990:166-176). Tschumi uses schizophrenia as an example, because schizophrenics succeed in existing through hiding in another mode of being. They exist 'outside' the body, sacrificing origins, identity and protective limits. This disturbs and interferes with the relation of subject to reality, and subverts content through form by placing words and objects on the same level. La Villette aims to make possible a correspondence between the schizophrenic dissociated elements. Knowledge of our relationship to such dislocated parts (whether of a city or an idea), and the necessity of such a relationship, brings us to transference. Transference is a tool with which we can

[12]From here on referred to as 'La Villette'.

try and reconstruct the totality of the subject, and relates to a similar practice in psychoanalysis. The points of the grid of La Villette acts as meeting points or catch-nets for the fragments of dislocated reality due to dissociation. The grid serves as a diagram of order superimposed on the disorder of reality. The grid not only secures but also articulates and activates space (Tschumi 1998:177-179).

Each *folie* serves as a support or the focus point for the reassembly of a new reference system. Without it the Park cannot form the dissociations into a system of relations between objects, events, and people. Madness is simultaneously a word and an object, a mixture of entertainment and psychoanalysis. In La Villette the cubic cages of red steel are the *folies* and can undergo deviation through permutation and combination of parts. Madness is taken here for use as invention. Reflected in such an approach is the contemporary milieu of disjunction and dissociation between use, form and social values, that we find ourselves in. La Villette represents, or rather replicates, these disjunctions which are superimposed by points, lines, and surfaces. The latter three registers can also be objects, movements, and spaces. Such superimposition allows for unpredictable interruptions and contaminations. Further interference and discordance are successfully introduced by subcontracting each *folie* to a different designer.

La Villette is thus truly heterogeneous and promotes instability, disruption, and confrontation of elements (Ulmer 1990:167). Important for us is that this does not imply that the theories, ideas and practices of the natural sciences, social sciences and humanities should be synthesised in a unified field. These sciences are different and should be *related* to each other through chance interference. La Villette is the park or space of discourse through which groups can be distributed. This is similar to how the *folies* were subcontracted to allow for inventions and surprising cross-contaminations. It is a collective construction based on a point grid that joins while at the same time keeping distinct and separate; the grid mediates between mutually exclusive systems. The *folie* is an anchor, permitting synthesis. On the site of La Villette the grid of *folies* allows for the combination of places of transference, and the *folie* becomes both the place and object of transference. It is a regrouping of dissociated structures through the fragmented transference in madness. (Tschumi 1998:179-180; Ulmer 1990:168).

La Villette, though, is above all about combination. This seems to be in opposition to what we have said so far about disjunction, dissociation and fragmentation. La Villette also challenges institutional structures such as museums and urban parks. La Villette is combinative in the sense that it regroups our fragmented contemporary, mad, condition in unexpected ways. This is done through permutations that have no link to the past of the fragments, and the new 'whole' that they now form is not coherent.

The projects of the American architect Peter Eisenman (Steele 2001:203) was strongly influenced by the philosophy of 'deconstruction' of Derrida, which introduces disorder deliberately into communication as a virus, and destroys logocentrism (where the language of a text takes precedence over its content, and meaning is fixed). This is the major difference between Post-Modernism and Deconstructivism, as the destruction of the dominant position of language and text stands in opposition to the semiotic structure of Post-Modernism. Derrida's philosophy has also found a 'place' in architecture (besides literature, literary theory, cultural studies, psychology, media studies, art, linguistics, and others) in that it allows for interaction between architecture and the home. It is in the home where philosophy, discourse and aesthetics are positioned. Even though we are not going to discuss Eisenman, he is an important figure in Deconstructivism. He was the first to focus on the decentring of the human being by the use of the idea of a continuously changing text in architecture, or an eternal whirlpool of disintegration and renewal. He accomplished this by weakening the traditional symbolism of shelter and permanence, as well as displacing conventional representation, in his architectural projects. (Steele 2001:203).

A similar rejection of the preexisting ideology of past masterplans, is found in Tschumi's point grid of *folies*. The latter offers a place for new investment, accessing space, and from space to time. The dialectic of space and time permits the building of the imaginary through symbol and reality. The *folie* as an intermediary space allows a multidimensional approach and we can introduce the restructuring of a dissociated world on new bases. It will be new because the reconstructing of a reality that has been deconstructed can never be done as it was before (Tschumi 1998:179-180). Tschumi's reference to the psychoanalysis of Jacques Lacan is timely for us in Information science. Lacan's position, according to Tschumi, is that even though theory is informed by practice, it can

never be reduced to that practice. Architecture may be informed by space, time, history, movement, but cannot be those factors alone (Tschumi 1998:175-6). This kind of realisation needs to be made in information theory and information practice. Practice is not the effect caused by theory; there is still a point beyond application that is never reached as final and fixed synthesis. We need a theory that allows for the unexpected, chance, the unsure, disjunction, the pragmatic and emotions. The irrational, as in architecture, has been excluded from what we regard as reason and needs to be accounted for. Reason and unreason, for example, may be in a dualistic relationship, but such an opposition does not make the one (usually reason) preferable above the other. This allows for understanding dualism not as oppositions, but as dependent on each other for existence and meaning. Invention, as exposed by Tschumi's projects, is suppressed and avoided through conditions that do not encourage discovery and invention. We typically find this in a university setup that organises the divisions between disciplines in such a way that it is almost impossible to breach the fixed boundaries of specialisations. It also makes the configuration of meaningful information more complicated.

Tschumi offers us a way of shifting the deadlock. He does not theorise and then design. He attends to theoretical concerns as he designs or works in the "*language of art*" (Ulmer 1990:165). To accomplish this we need to question and reassess the classical oppositions found in conventional theories and practices. This includes persistent classic oppositions in university courses, for example truth/action, basic/applied research, science/humanities, knowledge/opinion, research/popularisation (Ulmer 1990:166). These oppositions are important, and do not simply *not* exist just because we do not want to accept them. It is rather about an awareness of such oppositions and the possibility of studying them together as part of the same environment.

4.9 Conclusion

The relation of power to information and knowledge, is also a relation of power to madness and action. The closeness of the relations between power, madness and action, is clear when attempting to define them as concepts. The information society is the milieu within which power, action and madness, are situated. Society is dynamic and is affected by scientific and technological efforts. Even though it may seem that the shift or change from the Modern to the Postmodern can be clearly distinguished, ideas of the Modern still permeate the Postmodern in aspects such as art and aesthetics, politics, science, truth, intellectual pursuits, madness and its association with unreason. Armed with meaningful information and understanding, a society will hopefully have the power to shape its own future. Yet, hidden agendas and personal pursuits may distort the way information is configured and represented or repackaged as meaningful, and since we can never be entirely uninvolved in some way, such distortion is not necessarily negative but inevitable. This opposes the idea that scientific and technological endeavours are autonomous and separate from the complexities of society.

According to Bauman (1994:294) the modernist approach to science, offering us scientific knowledge that is superior to any other knowledge, sets out to purify the world of unreason, madness, obscurity and undecidability. This is to be done in order to bring about a harmonious and transparent world. This is similar to Dupuy's myths of the information society. Such a disclaimer of uncertainty and ambiguity has been strongly contested in the postmodern abandonment of the idea that the pursuit of knowledge will rid us of such temporary uncertainties. It needs to be acknowledged that there is more than one way of reporting an event, or many ways a story can develop, depending on the world view and agenda of the individual or group involved. Modernity moves into postmodernity when it accepts that as knowledge grows, so the field of ignorance will expand. This awareness of the constant of ignorance and the unknown does not imply that the journey for knowledge is futile, but that we should persevere in the travel while accepting that the acquisition of knowledge expresses itself in the awareness of more ignorance.

Bourdieu (1992:46-49) suggests that we do not define universal limits, but rather define limits in terms of their social constitution. This way we can perhaps create ways of including even what seems impossible to research, into our fields of study since truth is seldom obvious. Our internal censors, as well as social censors, can make a whole collection of things unthinkable. We need to be aware of these censors as a practical way of ensuring that in defining the limits of thought, we are constantly aware of the social and intellectual rootedness that determine the object and subject of research. Setting boundaries inadvertently excludes other related fields of study, but does not make them less valid. Set boundaries or limits should allow for further development and growth. (Bauman 1994: 294-295; Foucault 1980:230-237).

In the next chapter on information science we attend to the possibility of setting such boundaries while remaining open to, and aware of, interdisciplinary influences. This is discussed against the background of the aspects covered in this study. We cannot establish information science as an interscience in the configuration of meaningful information, if we do not study the aspects that strongly affect the way people configure and represent their world of knowledge. These aspects were attended to in the previous chapters regarding the concepts of information and knowledge; the information society as the environment for meaningful information; our experience and memory of ourselves as being and of others in our world; and how language, image, power and madness are represented and configured (and how they in turn shape and determine how we represent and configure them as meaningful information).

CHAPTER 5
INFORMATION SCIENCE AS EXPLORER OF MEANINGFUL INFORMATION

5.1 Introduction

We focus here on the role of information science, as an interscience, in the configuration of meaningful information. Also brought together here are meaningful information and knowledge for action as an applicable framework. We have already in the foregoing chapters touched on aspects such as theory and practice, and related information and knowledge work; the neglected aspect of human fulfilment; the consequences of action; the problems and challenges of information overload; creativity and inventiveness; the questioning of traditional conceptions of science and knowledge. The shifts and transformations due to postmodernist influence, knowledge approaches in the sciences, and so on, do not leave information science unaffected. One form that action can take on is that of exploration. The purpose of exploration on the one hand is about searching and travelling to be able to make and search out discoveries, examining carefully unfamiliar territory. A result of exploration may be the establishment of procedures and ground rules. To be able to reach the point of establishing such stability it is necessary to establish the nature of an issue, problem, uncertainty, etc before treatment or solutions can be brought about. As an explorer of meaningful information, information science retains the value and existence of its two main approaches to information, that is a broad and narrow approach, as discussed in this chapter.

The aim is to indicate whether information science can be a major role player in the configuration of meaningful information. The problem faced is the immense amount of available information, of which a small percentage may be meaningful, thus containing and representing content of more than use-value. The value of experience, implicit and explicit knowledge, understanding, interpretation, are all intricately related. If some are focused on to the detriment of others, it eliminates vast and rich fields that add to configuring meaning from an array of information sources. Meaningful information can be configured or separated from the mass of available information through the formal but flexible springboard of an interscience, such as we propose information science can ideally be.

We have addressed the paradox identified by Dupuy (1980), that the more information we have access to, the less meaning we have. This forms part of the problematic of configuring meaningful information. A search for, and a shaping of, meaningful information may prove more fruitful than the search for absolute truths. The challenge to information science is to find and create ways of including that which is considered beyond the preconstructed limits of the discipline. These limits must ideally be open-ended to allow broader enquiry into the phenomenon of information, and we saw the possibilities for this in Tschumi's approach in his point grids and *folies* of La Villette.

Another important focus of information science is the discipline's concern with humans, their knowledge usage, the knowledge transformation process, and especially the conceptualisation of knowledge and information. It can be interpreted as being concerned with the re-empowerment of society. The person-world relationship attended to in chapter 3 on being and *dasein* showed us its complexity, and chapter 4 on configuration and representation emphasised inventiveness and heterogeneous thinking.

The involvement and engagement of humans with their world are deeply interrelated and interdependent. If our world is heterogeneous and the major matters interrelated, then Information Science cannot ignore it, because the field itself is located in that world. De Beer (1996b:75) indicates that it is not necessarily the issues that have changed, but that they need to be approached from a radically different point of view to what he calls 'new knowledge'. This is not merely a superficial shift. It is a real paradigm shift that needs the core of the subject field to be turned around, as well as a change in behaviour. Inventiveness needs to be core and not reproduction. As already mentioned in chapter 4, thinking and doing (theory and practice) are not on a continuum of two ultimately opposite points. The exercise of a science starts with thinking, and we think as we continue to practice because we always aim for that point beyond application called synthesis and understanding. Too often we stop at the application as if it is the ultimate end.

The traditional approaches that put the 'versus' between the development of theory and the practical involvement with matters, form a gap that needs to be bridged. This gap has led to an unfortunate isolation within information science of its theoretical and applied

considerations (De Beer 1996b:76-77). These considerations should be treated as necessary opposites that are complementary. The commodification of information, and also knowledge, hampers us here because a commodity approach does not want uncertainty or action or invention as it implies possible risk, and risk cannot be pre-solved or foreseen. The relatedness of chaos and order, for example, and concepts such as dissemination, discontinuity, chance, undecidability, and others, form part of a transformed conception of knowledge. Tschumi, Derrida and Eisenman especially emphasised these concepts and their opposites as of equal importance and validity, as well as their compatibility (De Beer 1996b:80-82).

5.2 Information science, science and a changing world

Contemporary developments in science seems linear and singular, a result of an undesirable separation between basic and applied science. The separation was unfortunate for both, because they are complementary. The aim should be at long-term goals and solutions. The artificial division in science is a modern phenomenon and not natural to the origins of science (which is interwoven with that of philosophy). According to Derrida and Lyotard the sciences need to move away from oppositional thinking, and recognise that there are instabilities (postmodern and deconstruction viewpoints). A distinction between the benefits and drawbacks of diversification and fragmentation must be made to avoid over-specialisation. It is important to share the existence of information, to communicate, to consider the humanness of users (or ‘players’), and ultimately acquire wisdom.

Risk and uncertainty which cannot always be accounted for in more traditional approaches to science, need to be taken into account. The importance of action lies therein that methods should be inventive, and not merely discoveries. Our world is created as we live and experience, and does not exist to be discovered. Unfortunately, scientific research (including the social sciences) seems caught up in the study of preconstructed concepts and ready-made realities. These ‘chosen’ concepts and subjects, all lie within a tradition of socially constructed limits. How a researcher uses and defines the concepts, indicates a particular tradition being favoured.

Preconstructed or given data offers itself as a reality, but it has been invested with the categories of unconscious construction of meaning-giving of those who constructed it in the first place – the subjective aspect. These constructed realities that subdue the power of knowledge for action, need to be exposed and challenged (Bourdieu 1992:37-44). One would find many reasons and arguments for and against the subjectivity versus objectivity debate in the sciences. Whenever the one is emphasised at the cost of the other, we find imbalance, narrow views, stagnated ideas and closed boundaries. Both carry great responsibility even though subjectivity, in the history of Western science, has been deemed less desirable than the goal of objectivity. Subjectivity is plural, polyphonic, *but* it is demanded of it to be singular (singularity). It becomes therefore ambiguous such as nation versus individual right. There needs to be a move away from the failure of the universal representation of subjectivity. Such a move is essential for the re-empowerment of society, and thus of the subject or individual. Society implies people which necessarily implies *human bodilyness*. Technology links this to virtuality and cyberspace. This new space has implications for how we look at, and experience, the position of the subject and the object (ie, meaningfulness and *dasein*, and our relations to others and the world). It should also focus on the importance of collective intelligence and our world view.

To repeat what we said in chapter 2, it is crucial that we seriously consider the function of science and technology in society in order to understand our position in the contemporary world (including scientific thinking, development, innovation, compassion, and curiosity). Interdisciplinary interaction should then lead to knowledge implementation. An interactivity between the sciences and society are crucial and can be reached through the application of information with appropriate meaning.

Scientific research and inquiry (McCarthy 2001:287) are guided by three cognitive interests corresponding to three forms of the humanities. These are technical control and instrumental rationality in the empirical-analytic method, the understanding of meaning and social action in hermeneutical science, and emancipation from domination in the dialectical or critical science. The cognitive interest of each form of the humanities will determine the objectivity, method, and logic of the validity claims of each form. Hermeneutics (the science of the interpretation and understanding of texts; the method

used to understand and study human beings in society), as part of the humanities or social sciences, emphasised issues of meaning and language in history. Two important foci of hermeneutics for information science are its role as mediator between past and present and text and interpreter (Hans-Georg Gadamer), which is about the historical dialogue leading to shared meaning and experience in which traditions and values of the past are transmitted to the present. The second focus is where hermeneutics have an interest in the understanding of the other, bridging time and individuals, repairing connections between traditions, and in the symbolic act of sharing meaning and values (Karl-Otto Apel). The goal of hermeneutics that should concern us in information science, is mutual understanding and communication necessary for the enhancement of practical life and the broadening of cultural horizons and social possibilities as beings-in-the-world (Heidegger) (McCarthy 2001:287-288).

The Cartesian dualism between subjective consciousness and objective reality is overcome. This is indicated as such by Gadamer's use of Heidegger's insights and vocabulary, which treat us as already existing as 'beings-in-the-world'. We have an active engagement with the world through the interpretation and understanding of our world. We make our world visible and known to others through the different forms of philosophical, moral, and technical knowledge.

The danger in the natural sciences has always been the arbitrary abstraction of individuals through a false objectivity to form artificial statements. Such arbitrary abstraction cannot be done by individuals, because they are involved in the world and history. Human beings are historical and interpretive beings involved in understanding and evaluating the world. Stated otherwise, the researcher is situated in a specific culture and historical moment. He or she therefore has a pre-understanding of existing cultural values and social meanings, the method of interpretive understanding, and can never stand objectively outside the process (as is presupposed by philosophical and scientific knowledge). Fore-knowledge organises our objective experience of the world in terms of the horizons of meaning which is the hidden cause of art, science, religion, literature, politics, etc. The ideals and intentionality of human action are directed by these cultural values. (McCarthy 2001:287-288, 294).

It is often theorists schooled in the traditional academic methods who develop radical ways of rethinking both subject matter and processes of analysis. It demonstrates the importance of a solid grounding in one tradition and constitute the emergence of another, developed in order to overcome specific issues. This is especially true of information science, within which such tendencies have been seen, but often suppressed by those clinging to the traditionally known and 'safe' paradigms. Important for any discipline, is the combination of drawing different sources of research focus together, engaging with new information forms, and attempts to produce new analytical methods. Through these efforts, identity is given to a discipline. Any new or young discipline, or scientific group, needs at some point to move away from its roots of origin. It is a price that must be paid in order for such a discipline or field to reach scientific research status.

Thus, the initial stage of exploration needs to mature into the unique field it aims to be. Such a move away from the core of the roots of a discipline implies a break or opposing set of aims, techniques, theories, etc. The discipline still needs to border or bracket itself within the ideal of interdisciplinary status. Such a discipline needs to consider the borrowing, adapting and altering of other movements (methodologies and systems of analysis) to produce a different set of ideas and issues.

Different analyses are not necessarily antagonistic or incompatible, but represent a different intellectual process. Therefore, a discipline can develop an own set of critical tools, because each discipline or movement engages with the material in a different way. By examining where such tools come from, it will then enable us to identify another set of influences for the discipline. The variety of paradigms with which a discipline concerns itself in turn produces new paradigms of, for example, the image or information. These aspects lead to the production of a new set of images, or approaches to information, that go beyond the mere combination of paradigms or representations. The key aim is to develop the analytical competence to address an increasingly image-driven world, focused on information (Fuery & Mansfield 2000:90).

All the changes happening in the sciences can be seen either as a more subtle paradigm shift, or as a dramatic and radical transformation. A redefinition of accepted concepts is needed, readdressing dehumanisation while avoiding humanism, and taking into

consideration new research into the ecology of knowledge. The importance of knowing on which modes of thinking (underlying philosophical assumptions) practices rest, and the new perspectives in practical and theoretical activities, have implications for the *power* relation of information. The power of understanding and explanation must not be underestimated. The intellectual ethnocentrism of the formal education system needs to be reassessed (Bourdieu). An interscience needs to investigate the ready-made realities and those that are hidden and obscured, that is those which lie beyond constructed objects. This is especially important as these theoretical realities do not necessarily exist.

5.3 Information science

Before we can consider whether information science is not only an interscience, but also whether it is well-situated as the kind of science that can be considered in the configuration of meaningful information, we need to determine what information science consists of. As Ingwersen points out, education in information science often overemphasises only one aspect, that is either strongly practice-oriented or mainly theoretical and scientific in scope (Ingwersen 1994:197). A helpful approach is that of Kochen (1983b:374). He refers to the narrow and broad sense of information science. Bates (1999:1043-1044) distinguishes in a similar manner between the visible substrate of information science ('paradigm[13] above the water line') and the invisible substrate of information science ('paradigm below the waterline'). We will refer to it as the narrow and broad approaches in the subject field of information science.

[13]The core of the paradigm of a subject field contains a body of theory and methodology. This includes the world view held regarding the phenomena of interest to the subject field (Bates 1999:1043).

5.3.1 The narrow approach to information science

In the narrow approach the focus is on recorded material (physical documents) and forms part of the explicit paradigm of information science. The concerns are with organising collections of documents and facilitating their access and use by library users (Bates 1999:1043; Kochen 1983b:374). In information science the processes employed for control are typically taught in applied information science, and are called classification, indexing, abstracting and cataloguing. Classification (grouping like things together), indexing (including thesauri) and abstracting are intellectual control of information resources devices. Cataloguing, on the other hand, is used for bibliographic description purposes, that is for physical control of information resources (Burger 2004).

All these processes are applied in libraries, archives, museums, the publishing industry, and all other information institutes where documentation is executed. The purpose is information organisation and retrieval, in other words, access to information. Classification systems reflect the treatment (or categorisation) of the universe of knowledge (also referred to as philosophical classification). Thus, classification has its roots in philosophy. Most classificationists (scheme-makers), such as Melvil Dewey and SR Ranganathan, were known philosophers. Indexing evolved as an application of these theories, and is accepted as a kind of classification. The theory of cataloguing is more of an applied nature in that it focuses on the functions of a catalogue, user needs and bibliographic control (Burger 2004). The main tasks, according to Kochen (1983a), that we are concerned with in the narrow approach is the continual selection from a growing record, bibliographic control or organising and maintaining the collection (as well as the tools that enable the information professional and his or her patron to determine what is in the collection and where it is), and guiding the patrons in the use of the records. These main tasks are consistent with a fairly stable definition of information science as "*the study of the gathering, organizing, storing, retrieving, and dissemination of information*." (Bates 1999:1044). These tasks relate to the core elements of the domain as identified by Ingwersen (1994:198), which are information seeking, retrieval, and management; IR systems design; and informetrics.

We can compare the product of classification theory, namely the classification system, to the point grid of Tschumi's *Le Parc de la Villette*. The grid relates to the classification system in the sense that like things are grouped or clustered together (each group a point or *folie*), even when these groups themselves may be quite disparate. Such an arrangement makes it possible to detect things grouped together that we thought were related but are exposed through the grid as not being so. It also makes it possible to detect relations not previously noticed or recognised, while retaining the benefits of an organised yet flexible system that continues to evolve.

Even though classification systems as applied by classifiers (tool users) belong to the narrow approach to information science, the theory behind such systems as configured by classificationists (tool creators) rather fit into the broad approach to information science. The understanding of the narrow approach or visible/explicit paradigm is essential if we are to understand the intrinsic unity of the entire paradigm. Bates (1999:1044) uses a definition of information science formulated by Borko in 1969. It includes aspects that span a narrow and broad approach, and these are the investigation of the properties and behaviour of information; forces that direct the flow of information; the means of processing information for access and use; the body of knowledge that relates to the organisation, collection, storage, interpretation, transformation, utilisation, etc, of information.

Borko sums information science up as having a pure science component (inquiry into the subject), and an applied science component (application, development of services and products (Bates 1999:1044). The narrow approach to what used to be called librarianship, has come a long way since its roots in library schools that taught routines and procedures, which led to graduates as doers rather than thinkers. The goal was 'use' as opposed to knowing or understanding, and the main concern was with process and not purpose. The dominance of and preference for online networks and access to databanks brought its pragmatic roots to the fore, though. We lose sight of the fact that it is about more than mechanised, efficient access (Shera 1983:383).

Ingwersen's (1994:198) idea of desired information features in his definition of information science that considers, and aims at, aspects such as the communication of

information to human generators and users; conceptualisation and understanding of information environments, information needs and seeking of individuals and groups; and organising information resources to assist in the successful access to desired information. We cannot begin to consider attaining meaningful information or assisting others in finding or configuring it, if we do not first of all understand our own information needs. The quality of interaction is determined by the ideas of desire and storage, and strengthened via an understanding of information in a broader context than technology and science, and allowing for flexibility of technology that fits the human (Ingwersen 1994:198-199).

5.3.2 The broad approach to information science

The broad approach to information science according to Kochen (1983b:374) is primarily concerned with information and knowledge, understanding and wisdom. These concepts involve the aspects or topics included in this study, such as language, images, power, being, etc. Taking one example from the subject field of information science, namely the study of human needs, we may realise the following. To fully understand, interpret and deal with human needs, it is necessary to understand the reactions of humans to their being and existence in the world, to the place and role of others in that world, how humans understand and experience, insight into cognitive processes, and the management of the environments within which all these aspects take place. Our reactions to all of the aforementioned determine how we will view matters such as power, madness, and the possibility of going over into action. For example, the use of technology, such as information technology (IT) and ICT, in classification, cataloguing and indexing to make sense of information. Our view of all of these things is our reference framework, including our pre-knowledge, gained and existing knowledge; and is the only way to configure meaningful information.

Certain goals identified by library and information scientist academics in Denmark, already in 1990, concern us and indicate that it is crucial to allow for the presence of both the narrow and broad approaches in information science. The goals are part of a continuous learning programme. The first goals of interest were to ensure that graduates are not just practitioners or professionals, but also scientifically minded. Such student

may be encouraged to continue with their studies to doctoral level, or to develop further in research careers, within the diversity of information and knowledge-related disciplines (Ingwersen 1994:198). The next goal, necessary for the success of the first, is that information science needs to be a coherent scientific discipline. One way of attaining this is promoting a global view of research, development and professionalism. Ingwersen suggests that the unproductive fragmentation of information science conceptions into various sub-disciplines be addressed.

The Danish model of information science is divided into Information Science Theory, Information Management & Economics, and Applied Information Science (Ingwersen 1994:200). These three sections concern boundaries and scientific viewpoints; making technology fit the human; information is about more than technology and science; and flexibility. Wersig (1990) divides his discussion of information science into the changing role of knowledge; going beyond the beginning of information science as 'documentation'; it has no scientific domain; knowledge for action; postmodern science; importance of interconcepts (which is about more than re-definitions). Interconcepts result from information science cutting across other academic disciplines, and having an interest in the subject matter of such disciplines. Bates (1999:1044) calls information science a meta-science. The interconcepts (knowledge) interrelate the concepts of traditional disciplines without being understood as transdisciplinary. The latter status would rob information science of its status as a science. (Wersig prefers to focus on *knowledge* rather than information.)

Hjørland (2002:422) identifies key questions such as what kind of knowledge is required by information specialists working in a specific subject field; or what approaches are used to produce domain-specific knowledge. Examples of such approaches are historical studies, research on indexing and retrieval specialities, empirical user studies, epistemological and critical studies, terminological studies, discourse studies, etc. What he identifies is the realisation that different domains cannot be treated as if they are similar, and that different discourse communities should be taken into account. The challenge lies in training professional information specialists while not merely teaching research subject knowledge alone.

The role of information science in the configuration of meaningful information in the face of the existence of such fragmentation, is determined by the issues covered in this study. This environment of information science brings us to the relationship with other disciplines. The environmental context has to do with language, aesthetics, images, etc and such a diverse context explains and leads to cultural diversity. All of this is crucial to information science, because to be able to classify from the apparent chaos of our growing knowledge universe, we need to understand and interpret the recorded information already available to us. Without meaning we cannot begin to grasp the impact of ordering our world of knowledge. We cannot afford to forget that even an organised system never remains static and rigid. It needs to be continually updated and evolved to keep track with an expanding universe of knowledge. It is not simply a matter of our environment having an influence on an organising system. The way we organise recorded information (as configured and then represented physically) can also influence our view of ourselves, the world and others. It is important that we have awareness of such an organising system as only a representation (and even manifestation) of the knowledge universe, and that it is not that universe itself. We are not prisoners to it, but retain the choice of configuring meaningful information, and because our world of knowledge is vastly expanding due to developments in ICT, it becomes even more imperative to be able to configure meaningful information. That is, configuring as an active verb, and not a passive receiving of meaningful information.

5.4 Information science as an interscience

As an interscience, information science could offer the means to meaningful information and knowledge for action. It is important to study and discuss information science as a possible interscience. It is essential to question the traditional conceptions of science and knowledge; and shifts or transformations taking place within these conceptions. According to Wersig (1993:231-233) there are four phenomena leading to the changing role of knowledge, that is, the depersonalisation of knowledge (communication technology); believability of knowledge (observation technology); fragmentation (presentation technology); and rationalisation (information technology). These phenomena also have implications for the sciences at large.

Some of the important aspects affected by the above phenomena are for example, information and knowledge; language; meaning and sense; ways of acquiring meaningful information (eg a special kind of science; reading; interpretation; inventive strategies); madness; aesthetics; value; complexity; and power/action. These aspects all exist and co-exist in a changing knowledge environment. Such a new knowledge environment implies new realities to be faced by any science.

Information science must not be seen as a prototype for a new kind of science. Its nature is interdisciplinary and entails a human perspective while remaining scientific. Ideally, such a science allows for a sensitivity to new concepts arising from the interaction, competition and collaboration, of older concepts. Interconcepts (Wersig) are taken from such diverse fields as physics, philosophy, psychology, semiotics, and literature. Examples of such concepts are aesthetics, stochastic-fractal, reason, knowledge, power, spatiality, imagery, calculus, meaning, unreason.

An interscience will necessarily practise pure and applied research as collective research (methodologies). It does not imply, though, that the group/institution dynamic prevents the individual researcher from exercising a unique and personal approach to research. It is important to keep in mind that subjectivity is plural and polyphonic, but there is a demand for it to be singular (singularity). This leads to an ambiguous position: nation versus individual rights, and failure of a universal representation of subjectivity. Whichever paradigm chosen, reductionism should be avoided. Or rather, the application of one paradigm at the cost of other methods (the danger of hegemony) must be avoided.

A focus on inventiveness, transformation, apparent opposites, and complexities, is one way of avoiding such dangers. It is essential in configuring meaningful information from an overload of mostly ‘meaningless’ information or noise. Information science as an interscience offers a means of overcoming Dupuy’s paradox of “ ... *ours is a world about which we pretend to have more and more information but which seems to us increasingly devoid of meaning*” (Dupuy 1980:3). This can be overcome by configuring or forming meaningful information, that is, how to give and find meaning within (and from) the mass

of the information ‘rubbish’ (Wersig) explosion. This touches on the nature of the myth, which is economic as well as political (Dupuy 1980:4).

Implied in a new kind of approach, is the re-consideration of concepts; reconsideration of the ecology of knowledge; and avoiding or readdressing dehumanisation, as well as the tyranny of ‘humanism’ (as distinguished from ‘humanitarian’). A new approach also aims at diversification rather than fragmentation (or at least a linking of those fragments). Power (including understanding and explanation) is an important factor in (or influence on) society. New perspectives are needed in practical as well as theoretical activities, for example on which modes of thinking certain practices rest.

5.5 Conclusion

An *interscience* seems to be an ideal approach for the contemporary era which is already moving beyond the postmodern, while retaining characteristics from both the modern and postmodern influences. Even such a scientific approach should avoid losing its uniqueness, and stagnation, in order to retain its viability and vitality. Weizenbaum (Wersig 1990:187) spoke about a rubbish explosion and the resultant loss of meaning. An interscience needs to re-address and evaluate the role of language, technique, and theory in information science. This means not ignoring the role of philosophy, semiotics, media, and technological facts of science and communication.

One of the main focus areas will be the human experience of time, space, and reality. Linear guidelines (grid) will be complemented and supported by non-linear ones, which is a challenge that must be faced. A new *research context*, or a re-evaluation of the existing one, is needed and such a context will have a broader spectrum which can be narrowed down where necessary. There are no predetermined results and an interscience should have more than problem solutions in mind. To repeat Ingwersen's identified aims for information science: global view and professionalism of research and development; avoidance of unproductive fragmentation of library and information science conceptions into separate semi- or non-related sub-disciplines or units; human generators and users, thus human aspects; broader and more synergetic views; desired information; and the quality of interaction, thus intentionality for acquiring information.

Information science does not claim to be *the* science of information, and is not confined to the study of scientific information transfer and access in society, or solely on the means of recording and communication (information technology applications etc). Other areas of concern for information science are more and more determining its boundaries and scientific viewpoints, such as making technology fit the human, recognising that information is about more than technology and science, and that flexibility in its research methodologies is crucial. This is emphasised in the following quote by Shera (1983:384) "*Processing data can be performed by machine, but only the human mind can process knowledge or even information*." Related to this is Shera's statement that librarians are only "*incidentally* [dealing] *with things but primarily with ideas, concepts, and thoughts*" (Shera 1983:384). It seems clear, in the present context of information science (consisting of a broad and narrow approach), that the scope of information science is no longer limited to the manipulation of data. Mansfield reflects on Shera's statement as meaning that information scientists are dealing with sociological and psychological phenomena, rather than physical objects and processes, as their main concern.

CONCLUSION

The challenge to information science is to address the various viewpoints regarding conflicting conceptualisations of information and knowledge (and the confusion of the one with the other), the idea of an information society, which we may or may not yet be, the role of existence in a world shared with others and objects, and how representation takes different forms in different ways. We find that these viewpoints are shaped, mutilated, subverted and represented as being original in a world that changes. Changes, promising benefits of progress, often disappoint when the human condition does not improve, and even more so in a global sense. Yet, humans have an astounding ability to adapt, not necessarily by changing themselves, but by adapting the environment to their changing needs. The role of communication, within the study of the humanities (user needs, thinking, behaviour, and so on), strongly affects meaningful information. As we notice throughout the study, it is especially communication channels that further complicate the situation created by the various language structures and usage (meaning, interpretation and understanding). These complications are not linear or controllable, and are influenced by how we experience time, space and reality.

Only meaningful information can truly empower society, and language, context and ideology all influence the way it is translated into action. Chapters 1 to 4 illustrate the aspects that influence any discourse regarding information, knowledge, meaning and truth. These aspects all enable and determine the configuration and representation of meaningful information. We established the information society as the milieu for the configuration of meaningful information, as well as the ontological milieu (being, relations to others and the world). These environments and contexts for configuration are important. Therefore, as society becomes more and more focused on productivity, the conflicts resulting from such productivity eventually flow over into all aspects of social life, especially those of knowledge, language and power. The closeness of the idea of an information society to information theory and technology, accentuates the ambiguities in what constitutes an information society. In many texts by information scientists, an understanding of ‘information society’ has more to do with IT and much less with humans. We find that it is important to realise that the function of science and technology in society is to understand the position of humans in the contemporary world. Scientific

progress always influences the meanings people appropriate from information as represented by such progress. We indicated that interdisciplinary interaction allows for knowledge implementation, and forms a basis for exploration through research. Such implementation is the interactive link between an information society and information science, that is, a society of informatisation. Such a society is the milieu within which the actualisation of meaningful information becomes possible, even though interpretation and experience develop in uncontrolled ways.

The ontological milieu was determined by attending to our existence as individuals in the world, and as part of a group within society. *Dasein* was also identified as existing beyond the world in which it exists. Human beings are meaning-giving creatures and the ontological milieu is the social environment of the essence and nature of the existence of things. The way in which we experience our existence (as individuals and members of a group) impacts on the representation and configuration of information. Previous experiences influence immediate and future observations. In the configuration of meaningful information, the effect of such experiences is represented in language, visual images, aesthetics, power relations, and madness. These aspects not only influence what we consider meaningful information to be, but also the way we configure and represent it. We also showed that we share and represent meaning through language, image, and so on. Actionable, meaningful information is affected by the manner of communication due to the dynamic nature of language and the power of images. Aesthetics cannot be ignored as it accentuates the role of imagination in science; the external and internal levels at which power operates are visible in the information society and influence the manner in which meaningful information is configured. Finally, madness serves as an example of society's treatment of that which is considered too different or strange from what, at the time, is viewed as the norm. Madness also illustrates the effect of power relations and how knowledge is understood.

Le Parc de la Villette of Tschumi was used as it is a good example of interdisciplinary action (architecture, psychoanalysis and philosophy of deconstruction). It was found to be a way of overcoming borders in the way it allows for external and internal aspects to mingle, without becoming each other. The space allowed for open debate and collaborative research, is what information science needs to strive for. The challenge is

that theory can never be reduced to its practice, even though theory is informed by that practice. A science needs to reflect the world within which it finds itself, and has to reflect an awareness of the existence of oppositions. The point grid was used as an example of how classification brings together apparently very different knowledges, without merging them with each other. Such a point grid allows for the study and consideration of concepts and research fields traditionally viewed as being outside the domain of information science.

As an interscience, information science can definitely be an explorer of meaningful information. For that purpose we identified the two main approaches within information science. The first is the narrow approach (application), and the second is the broader approach (creates environment for application). Through these two approaches, exploration can take place, allowing for an understanding of how other sciences relate to information science. The relation between information science and the other sciences never remains static. It changes as the environment and the sciences themselves change and develop. Proper theorising of the interrelatedness of the sciences is necessary for cooperation and healthy dialogue, since the shared aim is the desire for knowledge. The challenges faced by information science are to place its narrow approach of knowledge transfer and retrieval within a socioeconomic context, understand the relevance of its vocational focus, and how the competition from computer science, in serving the information processing needs of the information professional, affects its future role. These challenges are accentuated by the fact that the role of knowledge in information science has long since moved beyond its initial concern with documentation and representation of information. As individuals, societies and technologies evolve, so do the structures of application and thought.

One answer to these challenges is the creation of an interdisciplinary framework that goes beyond the information processing paradigm, and works with meaning in practice. This requires a clear shift from approaching ‘information-as-object’ to approaching ‘information-as-contents’. This depends on a deeper conceptualisation of information. Information science as an interscience offers ways of explaining relations to other sciences via a broader understanding of informatisation. ‘Broad’ does not imply a lack of paradigm. A paradigm ensures an ordered, yet flexible, framework for doing research,

applying theory, and allows for the establishment of creative scientific relationships. Such an interscience is placed as complementary to formal and mathematical approaches. An interscience is flexible enough to articulate what lies on the other side of the divide (often indistinct) between the sciences. Applying concepts from other scientific areas provides explanatory (hermeneutic) power. Familiar ground can be avoided and underlying paradigms and historical processes can be investigated.

Many disciplines, and information science is by no means an exception, tend to react to change by either clinging with more determination to existing structures and guidelines, or to get rid of everything 'old' and to embrace the new with fervour. Lacking is the realisation that it is not always the content that needs to be reassessed, but the structures superimposed on it. Research that cuts across different disciplines does not threaten the core of any discipline. It offers opportunity to view persistent problems and contentions from angles not considered before. The possibility of configuring meaningful information can never be seen as limited to one field of study. It should be clear from the chapter on the configuration and representation of meaningful information, that meaning is construed from sources varying from the predetermined to the unexpected. We need to take into consideration the changes that take place and how the sciences reflect these changes, but our responsibility is not to rush in where thoughtfulness could serve us better. An interscience remains a science, and needs to be aware of the five principles of a scientific methodology (the objectivity axiom and the role of faith; truth criteria and the role of discovery; the hypothetical status of all empirical statements including the statements of the laws of nature; the pragmatic's criterion; and the role of mathematics – Masani 1998:278-281). The way these principles are adhered to, interpreted and applied, depends on the space, time, society and science we find ourselves in. These principles are more flexible than they appear at first sight.

Information science has been demarcated as a broader interscience, without losing sight of the importance of scientific research in its explorations. Explorative research ideally consists of two parallel, yet inclusive, directions. These directions are invention (of the new) and discovery (of the existing unknown). Through demarcation we still determine the boundaries, but interdisciplinary action allows movement outside them without losing focus. Boundaries offer responsible ways of dealing with changes, influences, and the

unknown, without becoming fixed and stagnated. Even as information science becomes a vehicle for bringing an understanding of the sciences together (without becoming those sciences), its characteristics as a science remain important. The point grid involves both the narrow and broad approach. This way the narrow approach allows for the necessary specialisations, and the broader approach ensures that the narrow approach avoids over-specialisation in isolated pockets of research. The 'trend' bandwagon can also be avoided in this way, and Lewis Mumford (Nora & Minc 1981:124) warns that "*Trend is not destiny*" and that the future is always uncertain.

Therefore, knowledge of the history of any science remains important. Sadly, we find that the teaching of the history of information science has become less frequent and more shallow. When it appears in a curriculum it often seems to be included as an afterthought. The handling of knowledge has a long history and Vickery (2004:29) sums it up by stating that "*the heritage of ideas and practice on which we may draw*" is essential in "*knowing how we got to where we are*." The narrow approach is often overemphasised in curricula that emphasise the teaching of skills that will have immediate value for employers. The narrow approach needs to be grounded in the broader teaching of knowledge that will be valuable in a continued career, no matter what the employment. We do not want to end up with a static profession that merely 'trains' students to fit into the available job market. It is necessary to offer prospective students a sound grounding in a wider range of professional concerns. This is possible since information science is everything but static in its nature as an interscience. An information science that embraces narrow and broad approaches can contribute cultural value to general education. It will then allow for lifelong learning, deepened knowledge and skill, while avoiding the trap of the mentioned over-specialisation. Practical and research experience, the interests as represented by other sciences and how those interests relate to problems in the field of information science, are included.

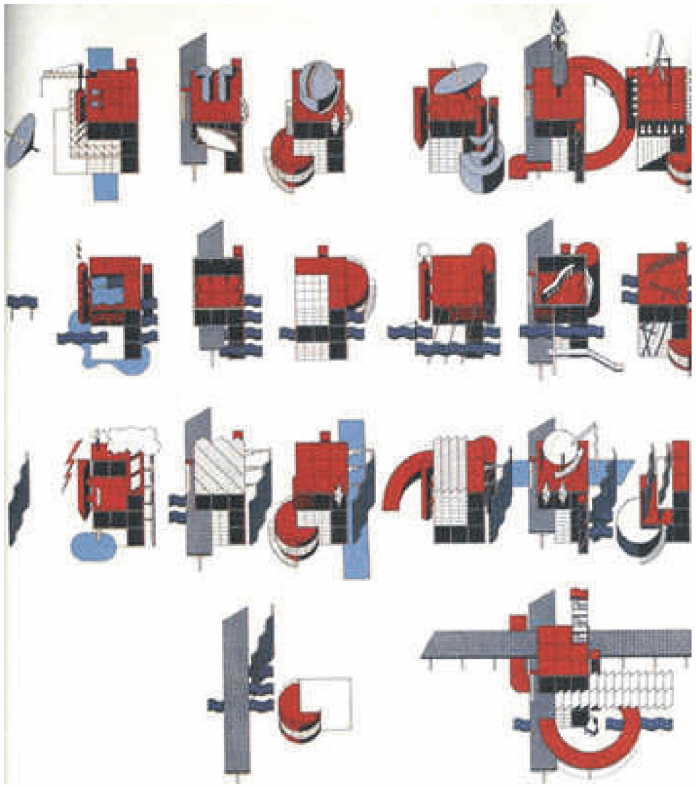
In conclusion, we find that information science as an interscience is ideally situated as an explorer and configurer of meaningful information through active participation. The three closely related aims identified are (i) the configuration of meaningful information; (ii) the role of information science in the configuration of meaningful information; and (iii) what kind of information science can fulfil aims (i) and (ii). These aims were contextualised

within the contemporary information society, and supplied with an ontological milieu. We explored the uses and contexts of the concepts of information, knowledge and meaning. Where will information science be an explorer? Exactly in those areas often neglected in the study field of information science.

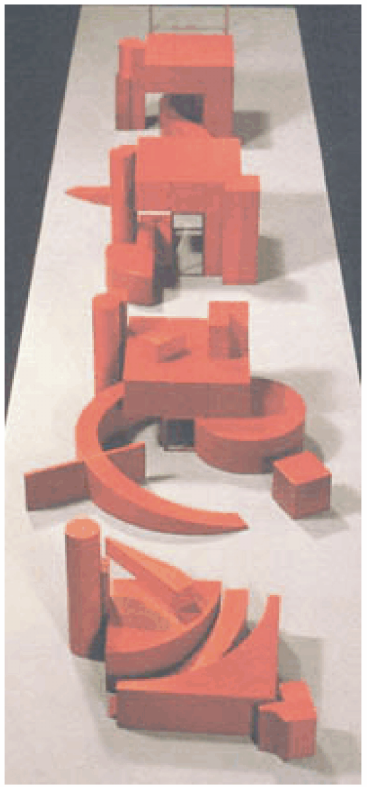
APPENDIX

PLATES 1 – 8: Bernard Tschumi's *Le Parc de la Villette*, Paris (1984 – 1990).

PLATE 1



Combinations of Folies



Combination Model

Source: www.kmtspace.com/kmt/tschumi.htm

PLATE 2

Bernard Tschumi
Le Parc de la Villette

Source: www.chez.com/fransforarchitecture/AR/Tschumi.htm

PLATE 3

Bernard Tschumi
Le Parc de la Villette

Source: www.chez.com/fransforarchitecture/AR/Tschumi.htm

PLATE 4

Bernard Tschumi
Le Parc de la Villette

Source: www.chez.com/fransforarchitecture/AR/Tschumi.htm

PLATE 5

Le Parc de la Villette

Source: www.chez.com/fransforarchitecture/AR/Tschumi.htm

PLATE 6

Le Parc de la Villette

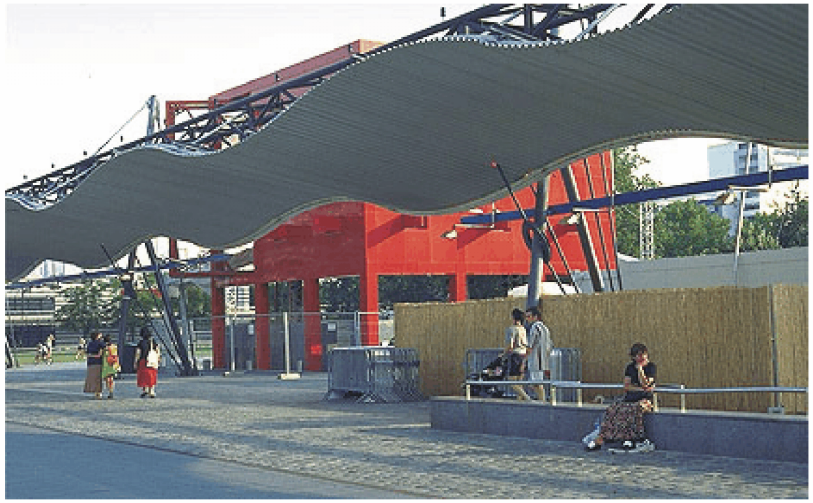
Source: www.chez.com/fransforarchitecture/AR/Tschumi.htm

PLATE 7

Bernard Tschumi
Le Parc de la Villette

Source: www.galinsky.com

PLATE 8



Bernard Tschumi
Le Parc de la Villette

Source: www.galinsky.com

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