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Poullet, Yves; Stenne, Pascale; Bodart, François; HELLA, M.

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A PROTOTYPE ADP SYSTEM TO ASSIST JUDICIAL DECISION MAKING

F. Bodard
M. Hella
Y. Poullet
P. Stenne

Notre-Dame de la Paix University Faculties
Namur (Belgium)

The purpose of this report is to set out in broad outline the two functions of this prototype to assist judicial decision making: the first is assistance in documentary research from elements of reasoning pertaining to a judgment and the second is assistance in assessing a judgment's coherence.

For this reason, the system uses a case-law database comprising a structured representation of the elements entering into the formation of each judgment: its identification, the judge's reasoning propounded in it and the facts to which it relates.

1. ELEMENT IN THE MAKING OF A COURT DECISION

The project is based on the truest possible representation of the making of a court decision[1]. Every judicial decision is a structured amalgam of items of information whose composition makes it possible both to identify the judgment and to ascertain the reasons for its essential content.

Some of the items of information are structured, so that irrespective of the judgment they fall into previously defined semantic classes: this is the general information relating to the judgment (town, date, type, result, names of parties, roles assumed by the parties).

It is on the basis of this information that most judicial databases chiefly operate, adding a brief summary of the judge's reasoning.

We are here concerned principally with the representation of the reasoning in the strict sense. We have been working on about 15 French court decisions concerning the surety given by the manager of a company, the principal debtor, and the destination of that surety after the company's transformation. One decision on the subject (Douai, 18 May 1977) is reproduced in the appendix, and will serve as an illustration.

The judge's reasoning operates on non-prestructured information; it deploys a number of facts under one or more legal principles from which the decision is derived. Thus the judges of the Douai Court of Appeal cited the principles of the abstract act, the revocation of a contract and the renunciation of a right.

We should now, without making an issue of the de facto and de jure dialectic, explain the status of the legal principle as compared with that of the factual principle.

The principles of law occur as "standards", that is to say heuristic principles portrayed by the authority (statutory, judicial or doctrinal) through which the judge, working according to an arrangement he himself determines, associates a number of facts or groups of facts and a particular legal consequence. For instance, in the Douai decision, the principle of renunciation of a right established by the judge in paragraph 12 of the preamble is deducted from certain arguments such as the creditor's knowledge of the principal debtor's financial situation, and his knowledge of the surety's loss of interest in the company, and makes it possible for the surety to be discharged.

The application of a principle of law may be affirmed or denied by the judge; its presence may be regarded as relevant or irrelevant to the decision, as the principle of the abstract act recalled in paragraph 9 (But whereas ...) to be irrelevant where the interpretation of the judgment is concerned; lastly, a principle may be seen as having a number of properties from which one may determine what it encompasses and how far it extends. Paragraph 12 states that the creditor's waiver of the former surety is implicit in this case. Thus according to the Douai judges, the decision to waive a right may be implicit or explicit[2].

The facts, for their part, may be defined as the characteristic of an association between certain factual elements of the dispute in the problem of law under review. These facts may be subject to qualification; in other words they may be construed by the judge in terms of such principles of law as may apply: for instance, the fact that PG is Chiarman and Managing Director of the company subject to surety (paragraph 1 of the preamble) is qualified by the judge's mention of another fact, namely that the guarantee was given in consideration of the guarantor's ability to abide by his commitments within bounds compatible with his financial resources (paragraph 10). Their presence may be affirmed or denied by the judge; their importance may be nil, incidental or considerable.

At this stage in the reasoning, without giving an appreciation either of the logical representation of the elements of fact and of law, or of the conceptual model which will make it possible to describe the judge's reasoning, we propose to show where the jurist's interest in this representation lies. If the logical implications of elements of fact and of law, that is to say the "compositions", vary from one decision to another, then it may be useful, firstly, to know which have been considered satisfactory and kept in reserve for the preparation or formulation of future decisions and secondly, to measure the distance between the compositions specific to each judgment, their incompatibility with case-law or even their invalidity, whether intrinsic or in regard to the understanding of a principle of law.

2.   FORMALISING JUDICIAL REASONING IN PROPOSITIONAL LOGIC

As our distinction between fact and standard suggests, the

act of judicial cognizance does not consist solely in
establishing a conception of the fact (in other words -
restrictively speaking - finding the widest sense of a legal
concept or of a predicate to which that concept may be reduced,
and, in the light of the predicate's extension to a particular
factual entity, giving the relational significance of the
predicated fact, or even of the predicate itself). Essentially,
perhaps, the act of judicial cognizance might also consist in
expounding and deciding the legal character of a fact on the
basis of simple attributive propositions (that is to say, on the
basis of an universal comprehension of certain concepts) and
according to propositional links of varying clarity and
complexity. It is this moment of exposition of the legal
character of a fact - a moment implying the dialectic of the
deductive and the inductive approach - that we single out for
special attention by formalising judicial reasoning according to
propositional logic.

Of course, this level of formalization has its own
limitations[3] and it will be necessary subsequently to refine it,
without diminishing it, in accordance with predicate logic and
relational logic.

The purpose of this formalization is to highlight:

- what a judicial reasoning means: to clarify the natural
  language and render it univocal, and to search for
  equivalences between propositional operators;

- atomic or complex compositions of propositions of fact
  and of law by which the legal reasoning is deployed and
  established;

- the validity or otherwise of the reasoning;

- the justification of propositional logic.

2.1. Clarification of Natural Language

2.1.1. If natural language uses in propositional links a complex
and sometimes obscure form, then before we can understand them
and judge their value we have to examine their univocal logical
significance. We shall now consider some phrases of natural
language which may all be incorporated within a single logical
function, that is to say, the implication function:

$(p \rightarrow q)$ if by convention: p = a will (W) is valid
                                      q = a will (W) is signed

1. If a W is valid, then it is signed
2. It is sufficient that a W be valid in order to be
    signed
3. It is necessary for a W to be signed in order to be
    valid
4. A W is valid only if it is signed
5. A W is signed once it is valid
6. A W is signed provided it is valid
7. A W is signed unless it is not valid
8. A W is not valid unless it is signed
9. A W is signed except when it is not valid
10. A W is not valid except when it is signed

2.1.2. We may also consider some different phrases of natural language comprized under different but strictly equivalent logical functions.

-   If by convention: p = W valid
                       q = W signed

$$(p \rightarrow q) \leftrightarrow \tilde{}(p \,\&\, \tilde{}q) \leftrightarrow (\tilde{}p \lor q) \leftrightarrow (p \mid \tilde{}q) \leftrightarrow (\tilde{}q \rightarrow \tilde{}p)^4$$

-   These different but equivalent logical functions are translated as follows (in order):

    1. If a W is valid then it is signed
    2. A W cannot be valid without being signed
    3. A W is not valid or it is unsigned
    4. The fact that a W is valid is incompatible with the fact that it is unsigned
    5. It is sufficient that a W be unsigned in order to be invalid

2.2. Logical Schema of Judicial Reasoning

2.2.1. Judicial reasoning, involving propositions of fact and of law, has been analyzed in the form of the Modus Ponens of the implication.

-   By convention: given the formula $P(p_1, p_2, \ldots p_n)$ containing the elementary propositions of FACT $p_1, p_2, \ldots p_n$.

    : given the formula $Q(q_1, q_2, \ldots q_n)$ containing the elementary propositions of LAW $q_1, q_2, \ldots q_n$.

-   The model schema of legal reasoning is as follows:

    $((P \rightarrow Q) \,\&\, P) \rightarrow Q$ where:

    $P \rightarrow Q$:   may be taken as the "interpretative limb" comprising the statement of an hypothesis of fact and the statement of a legal principle.

-   P: may be taken as the establishment of the hypothesis of fact.

-   Q: may be taken as the statement affirmed or denied, and if affirmed, relevant or otherwise in regard to the decision.

2.2.2. Illustration

Basis: Douai Judgement, First Civil Chamber, 18 May 1977

2.2.2.1. "Interpretative Limb" (paragraph 9 of the preamble)

-   by convention: P: offer of surety
                   Q: principle of renunciation
                        given that Q_1: validity established in relation to the special conditions

<div style="text-align:right">

not stipulated in
the contract

given that Q_2: validity established
in relation to the
arrangements for
rescinding the
contract.

</div>

<div style="text-align:center">

It is assumed that:
$$Q = DF \sim (Q_{1.1} \& Q_{1.2})$$

</div>

- Paragraph 9 of the preamble P --> Q ($\sim(Q_1 \& Q_2)$)

2.2.2.2. Establishment of the Hypothesis of Fact (paragraphs 10, 11 and 12)

- By convention: P_1: original surety
  P_2: surety's intention to uphold his commitments within reasonable limits
  P_3: Need of surety for   *   further provision of loan by a creditor
  *   further activity of the company
  P_4: creditor's knowledge of the new situation
  P_5: new surety accepted by the creditor.

- Paragraph 10 and 12

  $$((p_1 \lor p_2 \lor p_3) \to p_1) \lor (p_4 \lor p_5)$$

2.2.2.3. Statement of the legal principle (paragraph 12 of the preamble)

- $P((p_1 \lor p_2 \lor p_3) \to (p_4 \lor p_5)) \to Q^+ (Q_2)$

2.3. Validity of the Reasoning

Apart from its role of clarification, search for univocality and equivalence of the various propositional operators of the natural language, the main purpose served by formalising of judicial reasoning is in identifying the types of legal inference which are valid or formally true and, as such, logically compelling.

3.   STRUCTURALIZATION OF THE JUDGMENTS DATABASE

A judgments database is required to translate the semantic structure of the judgment. It is expressed with the aid of a semantic - or conceptual - model with which it must be possible to describe both the structured and non-structured data as well as the logical implications, namely the composition that represent that rule of law propounded in the judgment.

The formalism used is that of the entity-relationship model
(Chen - 1976) (Benci - 1982). The principal elements of the model
are defined succinctly as follows (Bodart, Pigneur - 1983).

Entity:

An entity is a concrete or abstract object belonging to the
perceived reality, about which it is proposed to record
information. An entity exists as such only in relation to an
individual or a group which considers it as a whole, confers
autonomous existence on it and distinguishes it from other
entities and from its environment. It may possess any number of
attributes. Example: A person is defined as an entity.

Relationship:

A relationship is defined with reference to the
correspondence between two or more entities each of which assumes
a given role, and it enables information relating to this
correspondence to be recorded. A relationship may possess any
number of attributes. Its existence is contingent on the
existence of the entities which it brings into relations with one
another. Example Class-membership is a relationship defined
between the entities "class" and "fact/standard".

Attribute:

Characteristic or property of an entity or of a relationship.
Example: The "name" is an attribute of the entity "person".

Figure 1 shows the conceptual schema of the judgments
database in graphic form.

Conceptual Schema
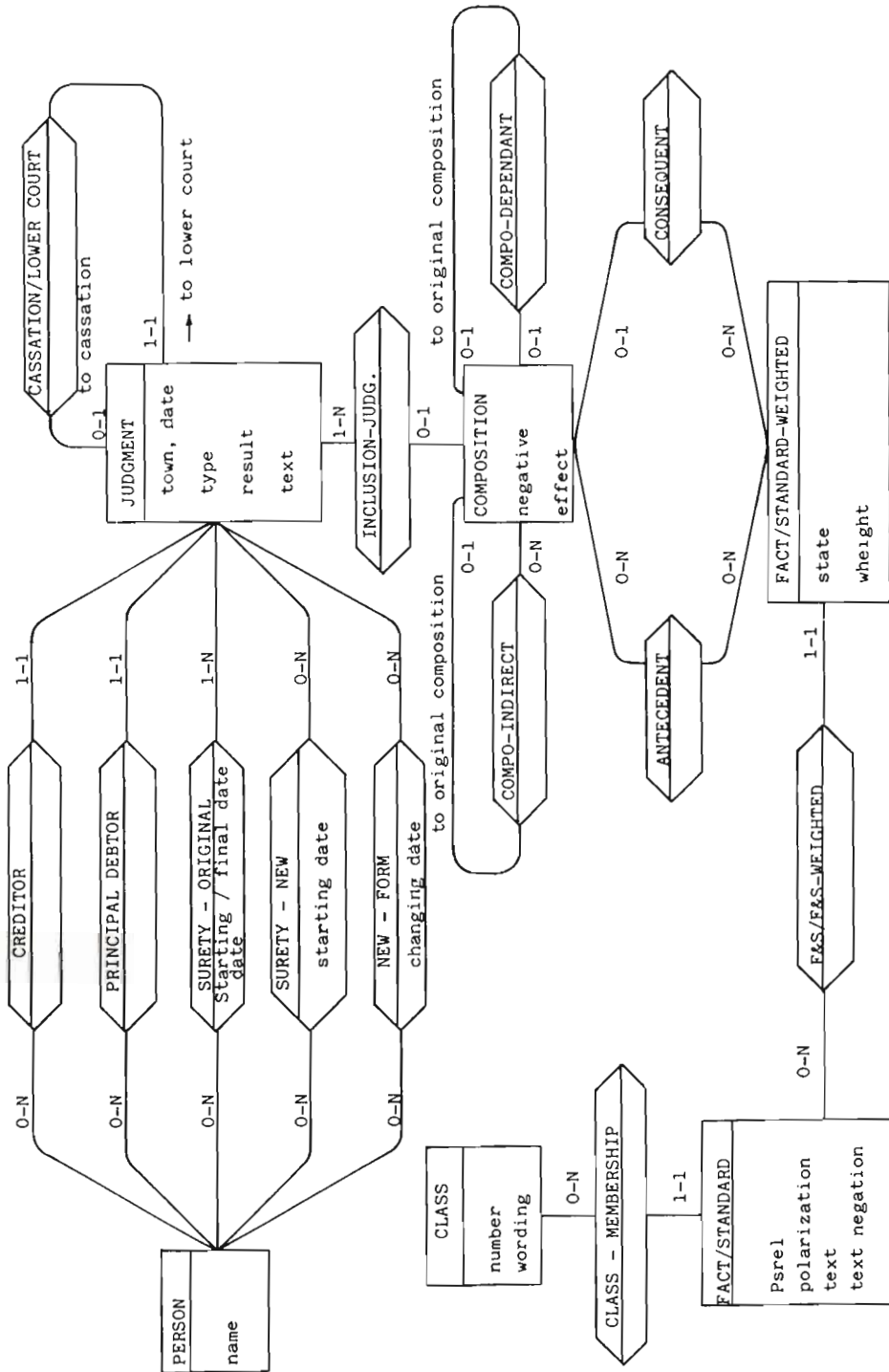
This representation is to be interpreted as follows:

-   entities are shown as rectangles;

-   relationships are shown as diamonds;

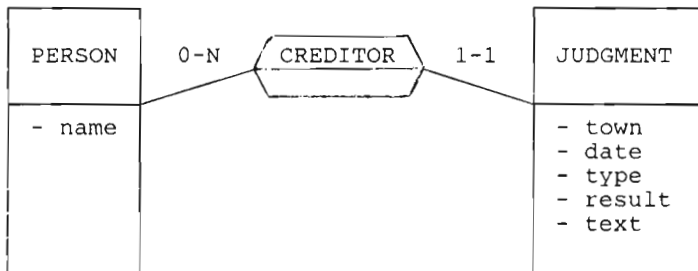-   attributes are entered in the lower block of a rectangle or diamond.

This can be illustrated by a commentary on the representation of the following part of the conceptual schema:

```
┌──────────┐                                    ┌──────────┐
│ PERSON   │  0-N   ╱CREDITOR╲   1-1            │ JUDGMENT │
├──────────┤        ╲────────╱                  ├──────────┤
│ - name   │                                    │ - town   │
│          │                                    │ - date   │
│          │                                    │ - type   │
│          │                                    │ - result │
│          │                                    │ - text   │
└──────────┘                                    └──────────┘
```

Each judgment comprises the following characteristics:

-   the town in which it was pronounced;

-   the date on which it was pronounced;

-   a type: cassation or lower court;

-   a result: whether the surety was discharged or maintained.

Every person is characterized by a name.

A person may play the role of creditor in a judgment (connectivity 0-N).

And in every judgment there is a creditor (connectivity 1-1-).

We must now check that this schema portrays the three categories of elements in the making of a court decision described in Section 1.

Briefly these categories are:

-   the general information relating to the judgment and the roles assumed by the parties;

-   the facts and standards taken into account in the reasoning, and how they are weighted;

-   the logical argument deployed by the reasoning, represented in the form of logical implication or compositions.

The facts and standards are represented in the form of

texts, that is to say non-structured data. The full specification of the conceptual schema of the judgments database is given in Appendix 1.

4.   CREATING THE PROTOTYPE

In discussing the system for assisting the judicial decision-making process, we took two main aspects into consideration: documentary research and assessment.

The documentary aspect refers to the use of the judgment database for consultation and updating.

The assessment aspect has two dimenstions:

-   checking a judgment's internal logical coherence, that is to say, making sure that the formalization of the rule of law propounded therein is logically coherent;

-   checking external logical coherence, that is to say, making sure that the formalization of the rule of law propounded in the judgment does not conflict with external elements of reference.

4.1. Documentary Functions

4.1.1. Objective

The documentary functions are designed for consultation and updating of the judgments database, with reference to the latter's conceptual schema.

As this database is made up of structured and non-structured elements, the system ought to be capable of handling both types of information. In practice, however, two different systems are involved: documentary research systems for the non-structured (textual) information and conventional DBMS's (Database Management Systems) for the structured information.

We have created a prototype which enables both types of data to be handled by supplementing the traditional functions of a DBMS with a documentary research system.

4.1.2. Characteristics of the Documentary Functions

Our options for the documentary research system were:

-   manual indexing of texts;

-   open repertoire;

-   thesaurus incorporating two types of semantic relations: synonymy and analogy;

-   inquiry by Boolean expressions connecting the descriptors; for example: list of standards which check against the following Boolean expression: cause OR creditor AND debt EXCEPT orginal.

For the handling of structured data, our options were:

- inquiries addressed by means of pre-established lists,
  e.g.: list of existing standards.

- selective inquiry: elements of pre-established lists
  complying with certain criteria,
  e.g.: - list of judgments in which Mr. X appears as
           the principal debtor;

        - list of compositions in which the fact No. 20
          appears as antecedent;

        - list of judgments whose compositions involve
          facts and standards selected by documentary
          research.

The combination of the two approaches (documentary research
and DBMS) thus makes it possible to consult a judgments database:

- not only by means of key words characterising the facts
  and standards;

- but also by means of the characteristics of the
  judicial reasoning propounded in the judgments.

Interface with the user is based on a dialogue conducted by
the system. We have chiefly made use of three dialogue
techniques: cascaded menu, question/answer and pre-established
formats.

4.1.3. Implementation

In creating the documentary prototype, we used the DBASE II
DBMS which offers some of the characteristics of relational
software [DATE - 1981].

Reasons for this choice:

- the transition from an entity-relationship conceptual
  schema to a relational database is comparatively
  simple;

- DBASE II possesses a programming and data handling
  language that is sufficiently powerful to program the
  conventional consultation and updating functions as
  well as the documentary research system;

- DBASE II permits the rapid creating of a prototype:

This documentary prototype is implemented on an IBM-PC (or
IBM-PC compatible) microcomputer in the MS-DOS environment.

4.2. Assessment Functions

4.2.1. Internal Coherence

It will be remembered that the purpose of internal coherence
is to check that the formalization of the rule of law propounded
by the judge in a judgment is logically coherent.

Various tests may be envisaged for checking internal coherence.

4.2.1.1. Polarization Test

A fact standard is <u>positively</u> <u>polarized</u> if its presence in a judgment as an "assertion" is conducive to a decision to discharge the original surety; it is <u>negatively</u> <u>polarized</u> if its presence as an assertion is conducive to a decision to maintain the original surety.

This test consists in comparing the polarizations of the weighted facts and standards that go to make up a composition, with the effect of that composition.

Incoherence will be presumed when a positively polarized fact standard enters into a composition conductive to the maintenance of the original surety, or when a negatively polarized fact standard is involved in a composition to discharge the original surety.

In other cases, the test reveals no incoherence.

4.2.1.2. Weighting Test

Weighting means assessing the <u>degree</u> <u>of</u> <u>importance</u> that the judge attaches to the fact of the standard in the settlement. It may be <u>considerable</u>, <u>incidental</u> or <u>nil</u>.

Carried out in conjunction with the polarization test, the weighting test tells whether the presumption of incoherence has or has not an explanation. The various degrees of weight are examined for any weakening influence they may exert on the effect of certain polarizations, which could explain the presumption of incoherence revealed by the previous test.

4.2.1.3. Intercomposition Check

If a particular fact/standard occurs several times in one judgment, one will wish to check that these occurrences are mutually coherent. The intercomposition check reveals whether the compositions within which the same facts/standards occur have the same effect and if they are identically weighted.

It is equally important to check that the same fact/standard does not occur in both the denied form and the affirmed form in the same judgment. This would warrant a presumption of incoherence.

4.2.2. External Coherence

Checking a judgment's external coherence means checking its formal validity in relation to external reference elements defined by jurists. These elements take the form of a predefined relationship between two facts or two standards. They are given the name <u>fact/standard</u> <u>validity</u> <u>group</u>.

Various relationships may be taken into account: implication, equivalence and incompatibility.

For   example:

the standard of the cause: if the cause is obliterated, the
contract becomes inapplicable is incompatible with the standard
of the abstract act: the abstract act is intrinsically valid;
whether the cause is present or not, the contract remains valid.

A composition of a judgment is deemed valid if it is not
logically incompatible with any of the validity groups so
defined. We therefore have to check that the following expression
is untrue for each settlement and for each validity group:
$(Fact_1, Fact_2, Fact_3 \rightarrow Standard) / (Standard_1 \rightarrow Standard)_2)$

Composition   validity group

Thus stated, the problem is reduced to the demonstration of
logical expressions.

At present, we state that a judgment is valid if all its
compositions are valid by comparison with the validity group, for
we consider the judgment as a "coordination" of compositions
(composition 1 AND composition 2 AND ... composition n).

4.3. Implementation

In carrying out the external coherence test, we have used
the language of logical programming, PROLOG.

This test is implemented on a DEC-20; another version is
being programmed into an IBM-PC, or IBM-PC compatible,
microcomputer using the micro-prolog language.

5.   POSSIBLE EXTENSIONS

5.1. Application of the present system to other judicial problems
than that of the surety contract in order to assess the general
impact of the chosen approach. For instance, a study will be made
of the representativity of the conceptual schema of the judgments
database: relevance   of the distinction between facts and
standards, possible widening of the semantic structure of the
facts/standards in order to take account of elements of their
environment (temporal, for example). This last aspect could
produce a formalization of the judgments different from that of
propositional logic (possibly with the use of temporal logic),
and bring the entity-relationship model under attack.

5.2. Evaluation of the extensions to the internal coherence test,
that is to say, lack of logical contradiction between the
different composition of the judgment and repercussion of the
external   coherence   test   (condition   for   the   latter's
decomposability).

5.3. Extension concerning the implementation of the prototype.
The different arrangements for interchange between the relational
judgments database and the prolog database [Walker] [Farke] for
the purpose of providing the user with a common interface for the
documentation and assessment functions.

Notes

(1) "... at least, for the process specific to the legal systems of the Romano-Germanic family where the rule of law is conceived as a rule of conduct vested with a measure of generality, of a higher order than the applications which the practising courts may be called upon to make" (R. David - 1982).

(2) Thus the renunciation is said to be implicit. It is useful to note that on 24 October 1979 the Court of Cassation (JCP, 1979, II 19344) summed up the properties of the principle of renunciation in the phrase "renunciation results only from acts that show unequivocal evidence of the willingness to renounce".

(3) The point of paramount importance here is that propositional logic takes into consideration only two values of truth, and that it cannot decide between reasonings involving operators that are not functors of truth.

(4) In Appendix II, there is a table of Equivalent Symbols Employed in Logic.

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APPENDIX I

OUTLINE OF THE CONCEPTUAL SCHEMA OF A JUDGMENT

1.   Semantic Description

1.1. Types of Entities

PERSON:

   A person is an individual or corporation involved in a
   judgment.

   "name" is the name of the individual or the head office
   of the corporation.

JUDGMENT:

   A judgment is a judicial decision relating to the
   problem of limited suretyship in the case described in
   the work of Hick and Tirtiaux (1) (2.1.2.).

   "town"   is   the   town   in   which   the   judgment   was
        pronounced.
   "date" is the date of the judgment.
   "type" refers to the level of proceedings: Cassation
        and Lower Courts.
   "result" refers to the result of the judgment. In the
        case of a judgment given by a trial court or on
        appeal, the result is referred to as maintenance
        or discharge according to whether the original
        surety is maintained or discharged of   his
        obligations to the creditor. If the judgment is in
        Cassation, the result is described as annulled or
        identical according to whether the decision of the
        corresponding lower court is set aside or upheld.
   "text" is the text of the court decision.

FACT/STANDARD:

   A fact/standard is an element that may enter into the
   formalization of a judgment. It is either a fact or
   a standard.

   "nrfstd" is the identifying attribute of the fact or
        standard.
   "polarization" refers to the polarization of the fact
        or standard. It may be positive, negative or
        neutral.
   "text" is the wording of the fact or standard.
   "text-negation" is the wording of the fact or standard
        when it is denied.

CLASS:

   A class combines facts/standards relating to a single
   concept. All the standards are combined in a single
   class.

   "number" is the distinguishing property of the class.
   "wording" is a brief description of the content of the
        class.

COMPOSITION:

A composition corresponds wholly or partly to the legal argument propounded by the judge in a judgment.

"negative" states whether the composition is a
    conditional negation or a condition.
"effect" is the effect of the composition. Its values
    are + and - according to whether the composition
    has the effect of discharging or maintaining the
    original surety.
    This attribute has no value if the composition is
    a judgment of the Cassation type or an indirect
    composition.

WEIGHTED FACT/STANDARD:

A weighted fact/standard is a qualified fact or standard to which the judge, in a judgment, has attached a particular status, and which may therefore enter into a composition.

"status" is the status of the fact or standard. Its
    values are asserted or denied according to whether
    the fact or the standard is present or absent.
"weighting" is the weighting of the fact or standard.
    It may be considerable, incident or nil according
    to the importance attached by the judge to the
    fact or standard in the composition.

1.2. Types of Relationship

CREDITOR (PERSON, JUDGMENT):

Conveys the fact that a person plays the role of creditor in a judgment. The person is a corporation.

SURETY-ORIGINAL (PERSON, JUDGMENT):

Conveys the fact that a person plays the part of original surety in a judgment. The person is an individual.

"starting date" is the date on which the person's
    engagement as original surety begins.
"final date" is the date on which the person's
    engagement as new surety ends.

SURETY-NEW (PERSON, JUDGMENT):

Conveys the fact that a person plays the role of new surety in a judgment. The person is an individual.

"starting date" is the date on which the person's
    engagement as new surety begins.

NEW-FORM (PERSON, JUDGMENT):

Conveys the fact that a person plays the role of the principal debtor company's new form in a judgment. The person is a corporation.

"changing date" is the date on which the principal debtor company changes form.

CESSATION LOWER COURT (JUDGMENT, JUDGMENT):

Conveys the relationship associating a trial or appeal court judgment to the corresponding cassation-type judgment.

INCLUSION-JUDGE (JUDGMENT, COMPOSITION):

Conveys the fact that a composition has been formed within a judgment.

COMPO-INDIRECT (COMPOSITION, COMPOSITION):

Expresses the fact that a composition is an indirect composition, in other words, an antecedent in a composition.

COMPO-DEPENDENT (COMPOSITION, COMPOSITION):

Conveys the fact that a composition is a dependent composition, in other words, the consequence of another composition.

ANTECEDENT (WEIGHTED FACT/STANDARD, COMPOSITION):

Conveys the fact that a weighted fact or standard is one of the antecedents of a composition.

CONSEQUENCE (WEIGHTED FACT/STANDARD, COMPOSITION):

Conveys the fact that a weighted fact or standard is the consequence of a composition.

F/S-WEIGHTED F/S (FACT/STANDARD, WEIGHTED FACT/STANDARD):

Conveys the fact that a certain weight has been attached to a fact or standard in a judgment, to give a weighted fact or standard.

CLASS MEMBERSHIP (FACT/STANDARD, CLASS):

Conveys the fact that a fact or standard is included in a class.

2.   Requirements for Completeness

1.   A WEIGHTED FACT/STANDARD must enter into at least one COMPOSITION either as ANTECEDENT or as CONSEQUENCE.

2.   A COMPOSITION has one consequence only. This may be a WEIGHTED FACT/STANDARD or a COMPOSITION, said to be DEPENDENT. The CONSEQUENCE and COMPO-DEPENDENT types of association are therefore exclusive.

3.   A COMPOSITION has at least one antecedent. THis may be a COMPOSITION, said to be INDIRECT. For each COMPOSITION there must be at least one ANTECEDENT relationship or a COMPO-INDIRECT relationship.

4. A PERSON is involved in at least one of the following relationships: CREDITOR, PRINCIPAL, DEBTOR, ORIGINAL SURETY, NEW SURETY, NEW FORM.

APPENDIX II

TABLE OF EQUIVALENT SYMBOLS EMPLOYED IN LOGIC

SIGNIFICANCE	SYMBOLS EMPLOYED	POLISH NOTATION	OTHER SYMBOLS
Inclusion	a ⊂ B		
Equality	a = B		
Meeting	a ⊔ B		
Intersection	a ∩ B		
Conjunction	p & q	K pq	∧; ε
Inclusive disjunction	p v q	A pq	
Exclusive disjunction	p w q	J pq	v̲
Negation	∼ p	N p	⌐ ; p̄
Implication	p -> q	C pq	⊃
Equivalence	p <-> q	E pq	∼
Incompatibility	p | q	Ɗ pq	o
For any x	(∀ x)		Ux,
There exists an x	(∃ x)		Ex,
Membership	E		

APPENDIX III

DOUAI JUDGMENT, 1ST CIVIL CHAMBER, 18 MAY 1977

Douai: 1st Civil Chamber, 18 May 1977

Guidez and others v. Crédit Lyonnais

THE COURT,

1. Whereas Pierre Guidez, Chairman and Managing Director of the Cambrai-Automobile Company, and his wife, born Colette Maurin, did on 28 May 1963 stand surety jointly to an amount not exceeding 125,000 Francs, for the obligations entered into by the said company with the Crédit Lyonnais;

2. Whereas on 28 March 1965, Lucie Guidez, born Mallet, widow, mother of Pierre Guidez, undertook to act as joint surety subject to the same conditions, to an amount not exceeding 200,000 Francs;

3. Whereas in the month of December 1972, Pierre Guidez, who held all the shares making up the authorized capital of Cambrai-Automobile, ceded them to Lamendin;

4. Whereas Lamendin, after becoming in turn Chairman and Managing Director of that company, undertook with his wife to settle, to an amount not exceeding 350,000 Francs, the debts owed to Crédit Lyonnais by the company of which he was now in charge;

5. Whereas, Cambrai-Automobile being subject to a compulsory winding-up order, Crédit Lyonnais, the creditor of that corporation, arguing that Guidez and his associates had not rescinded their surety undertakings, called upon them to pay the sums owed by the defaulting principal debtor subject to the agreed limitations;

6. Whereas in its judgment of 6 May 1976, the Cambrai Regional Court, allowing the application of Crédit Lyonnais, ordered Guidez and his wife to pay the principal of 125,000 Francs to that Bank and Mrs. Guidez Senior the sum of 20,000 Francs, and dismissed the Guidez associates' counter-claim for damages in respect of wrongful and vexatious proceedings.

7. Whereas Mr. and Mrs. Guidez and Lucie Guidez appealed against this judgment of which the defendant seeks confirmation;

8. Whereas it is generally agreed in case-law, as Crédit Lyonnais maintains, that the giving of surety is an act valid on its own account, requiring no determination of the grounds that cause the surety to undertake to be answerable for the failure of the principal debtor to pay;

9. But whereas the person entering into such an undertaking is authorized to offer evidence that, having regard to the particular circumstances of the case, the parties agreed to terminate their agreement without recourse to the contractual rescindment clauses;

10.   Whereas, in fact, it is apparent from the documentary
      evidence that the Guidez family group had undertaken to
      stand surety for Cambrai-Automobile only in consideration of
      that, firstly, one of the members of this family group, who
      was Chairman and Managing Director of the corporation under
      surety and owned its entire authorized capital, was in a
      position to abide by his commitments within a limit
      compatible with his financial resources and that, secondly,
      the surety undertaking was indispensable to the continuation
      of the commercial activities of the said corporation;

11.   Whereas this set of circumstances was known to the creditor,
      Crédit Lyonnais, who benefited from the surety and was fully
      informed of the particular financial situation of Cambrai-
      Automobile;

12.   Whereas the applicants rightly argue that from the day on
      which Crédit Lyonnais was advised that Pierre Guidez had no
      longer any interest in Cambrai-Automobile and was no longer
      in charge and accepted the surety offered by the new
      Chairman and Managing Director, Lamendin, in return for his
      continued financial assistance, it (Crédit Lyonnais) had
      implicitly, but inevitably, waived the right to take
      proceedings against the former manager of the company
      covered by surety and against the latter's parents;

13.   Whereas, in consequence, the claim lodged by Crédit Lyonnais
      must be dismissed;

14.   Whereas, however, it is conceivable that the said bank had
      been genuinely mistaken about the extent and duration of the
      undertakings given by Mr. and Mrs. Guidez, the counter-claim
      for damages presented by these last must also be dismissed.

      Now, therefore, on hearing the appeal, reverses the original
judgment; dismisses the claim of Crédit Lyonnais; dismisses the
counter-claim of Mr. and Mrs. Guidez; orders Crédit Lyonnais to
pay the entire costs of the proceedings, both in first instance
an on appeal.

APPENDIX IV

DESCRIPTION OF THE "COMPUTERS AND LAW" RESEARCH CENTRE (CRID)
OF THE UNIVERSITY FACULTY OF NAMUR

(Director: Professor Y. POULLET)
(Assistant Director: Professor P. MAON)

With its interfaculty structure, the "Computer and Law" Research Centre of the Notre-Dame de la Paix University Faculties at Namur (Faculty of Law, ·Faculty of Economics, Computer Institute) represents an entirely new concept unique in Belgium, linking research in three disciplines: law, computer science and economics.

It brings together members of two faculties and one Institute, plus a number of professional associates from outside working in the same disciplines.

At the crossroads of law and computer science, the Centre has selected four research themes, each entrusted to a different working group:

- Data Processing Contracts;
- Computers and Freedom;
- Computers as Aids to Judicial Decision-Making;
- Information Technology.

The Centre also makes an active contribution to the journal Droit de l'informatique / Computerrecht.

1. Data Processing Contracts

The purchase, hire or simply the use of data-processing equipment (hardware and/or software) by a small business, large company or administrative unit raises problems which are not only technical, but also legal. In attempting to deal with them, the jurist will not find adequate answers in the conventional principles and categories of the Civil Code, and will have to adopt an imaginative and creative approach.

What contractual clauses and what type of contract are appropriate when confronted with the technical complexity of the data-processing operation? Which solutions should be chosen from those proposed by the suppliers, makers, OEM, and advisory service when supplying businesses, lawyers' chambers or hospitals with data-processing systems? Is the software, in so far as it consists of original work, adequately protected by patent, copyright and the laws against unfair competition?

All these questions are the subject of meticulous research involving the use of a considerable volume of documentary material, much of it unpublished, as well as frequent contacts with workers in the field.

The Centre has organized a number of seminars on these subjects, the latest one being in the autumn of 1984.

Main published work: Le droit des contracts informatiques:

Principes application, Larcier, 1983.

2.   Computers and Freedom

The provision of computer assistance to businesses, government departments and the numerous national and international information interchange networks, could pose a threat to freedom, both individual and public.

It is desirable that a fair balance be struck between the file compiler's claim to information and the data supplier's equally legitimate demand for a right of access. It is essential to think afresh about the working of our parliamentary democracies as they master these new technologies, and to ensure genuine independence for our states.

In many countries, these aspirations and demands are being translated into regulations of various kinds. In addition to the general bodies of law, national and international, making file maintenance conditional upon fulfilment of certain obligations, there are more specific regulations, especially with regard to files of certain categories, as to the citizens' right of access to their administrative data, the control of transfrontier flows, and the information supplied to workers when new technology is introduced.

The Centre has offered to analyze these regulations and has established the guiding principles for what could be the relevant data base; it is giving particular attention to the development and work of the organizations responsible in each countr for arbitrating in the debate on "Computers and Freedom" a debate that involves everyone with a role in the country's economic and social life, often with competing interests to defend.

The Centre has organized a number of seminars and conferences on these issues.

The Proceedings of the Colloque of 25 and 26 Septemebre 1980 have been assembled in a publication entitled Banques de données - Vie privée (CIEAU-CREADIF).

3.   Computers as Aids to Judicial Decision-making

At present we are developing a prototype system to assist judicial decision-making.

The central feature of this ADP system is a case-law database comprising, for each judgment, a structured representation of the constituent elements.

The conceptual schema of this database contains, inter alia, the elementary identification of the judgment and the rule of law propounded therein. Propositional logic is used in formalising the judicial reasoning.

The functions of the present prototype are of two classes. The first concerns a documentary aspect and the second the assessment of judgments.

With the documentary functions it is possible to address inquiries to the database from the standpoint not only of factual elements of law but also of the way in which they enter into a judgment.

The assessment functions monitor the internal coherence of a judgment and its compatibility with "validity control groups".

The prototype has been created in the DBASE and PROLOG languages, on a micro-computer.

Two extensions are at present envisaged:

-   possible use of the calculus of first order predicates for the formalization of the rule of law;

-   improvement of the evaluation functions.

For the main published work, see the Bibliography.

4.   Information Technology

Information technology comprises all the services that make use of ADP techniques and those of tele-communications. Operations include consulting data banks, ordering consumer goods by videotex and conducting financial transactions.

These operations pose numerous complex legal problems, some of which call for a redefinition of the conventional concepts. For instance:

-   questions of proof (authentification of electronically transmitted messages);

-   the assessment of liability;

-   the legal value of information (intellectual property rights, protection of privacy);

-   questions of private international law;

-   the role of the public authorities.

The research team is making a study of contractual clauses, examining the provisions by which standards are defined in this field and proposing practical solutions.

Main publications: La telematique, Proceedings of the Colloque of 5 and 6 December 1983 - two volumes (Story-Scientia).

5.   The Journal "Droit de l'informatique - Computerrecht"

The Centre makes a very active contribution to the journal "Droit de l'informatique - Computerrecht" and provides the editorial team with a secretarial service.

This new quarterly jounal (the first number appeared in January 1984) is published by a.s.b.l. Jurimétrie in French under the title Droit de l'informatique and in Dutch under the title

"Computerrecht".

This publication offers feature articles, case-law, clauses, book-lists, etc. relating to the various fields of computer law. It is circulated in Belgium, France and the Netherlands by Story-Scientia (Ghent), Kluwer (Antwerp) and Librairie générale de droit et de jurisprudence (Paris).

Scientific policy is decided by three editorial committees: a French committee, a Netherlands committee and the central editorial committee.

Central Editorial Committee: Ms. E. De Cannart (Barrister in Brussels), Ms. J. Dommering, Ms. J. Hoorens (Faculty of Law, Namur), Prof. J. Huet (Faculty of Law, Rouen), Prof. P. Maon (Faculty of Law, Namur), Prof. Y. Poullet (Faculty of Law, Namur), Prof. Vanderberghe (Faculty of Law, Ghent and VU Amsterdam).
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