

APPENDIX A. SUMMARY

A model for legal informatics; the application of computer science to law

The present day world is marked by rapid and extensive automation. Automation has had its repercussions in a number of professions, and the legal profession is not exempt. Lawyers have come into contact with automation through questions of a legal nature associated with the process of automation, for example computer contracts, privacy and computer crime. They are also faced with a more extensive use of computers within the legal profession itself, for example text processing and documentation work. Informatics is also of particular importance to those engaged in academic research. "Legal informatics" is the study of the application of computers in the theory and practice of law.

The aims of this study may be summarized as follows:

1. To give an account of some of the techniques and methods associated with informatics.
2. To review the possible applications of computers and to give an outline of the use of models in the theory and practice of law.
3. The presentation of a number of speculations concerning the possible consequences of applying the techniques and methods of informatics to law.

The first section of this study consists of the presentation of various distinctions and definitions, including an examination of such terms as "legal", "science", "informatics", "information" and "data". The following section is devoted to an introduction into models (based on the work of Lave and March).

Attention is then focused on measurement, levels of measurement (types of scale), the importance of measurement to empirical science and the concepts of validity and reliability. In addition, a number of examples are given to illustrate the problems of measurement in the fields of legal and behavioural science such as those arising from the measurement of the "seriousness of an offence", the "legitimation of power" and "aspects of social stratification".

Further topics for examination are the so-called "empirical cycles", various sorts of scientific research, the use of models and, in association with this, the importance of statistics. Sections are also devoted to general systems theory and the relationship between the concepts of "system" and "model".

A number of observations are made concerning the importance of linguistics, logic and mathematics to legal informatics. In addition to these observations, the distinction between syntax, semantics and pragmatics of expressions is discussed as is the distinction between alethic and deontic (respectively from the Greek "aletheia", truth, and "dein", to ought to) expressions and questions.

Once these subjects have been handled, computers come up for discussion. After a brief history of technology and computer generations in particular, a number of characteristics and facilities of computers are set out. This is followed by a discussion on the software which may be relevant to law on the basis of the grouping:

1. accent on data processing
2. accent on storing data
3. accent on input and output of data
4. accent on transference of data
5. combinations of the above including some possible future developments.

A substantial section of the study is devoted to summaries of four projects carried out at Erasmus University which apply the theoretical considerations postulated earlier on in the book. The research conducted in these projects was concerned with pragmatic, semantic and syntactic aspects of legal language and the relations between them. It is the task of legal science to perform empirical research here and the first three projects which will be described below are a step in this direction. In this sort of research, computers are in many cases a helpful or even a necessary tool.

The first project concentrated on syntax. The texts analysed were those of Dutch laws. The aim of the project was to ascertain whether the word usage of the codebook of Criminal Law and that of Criminal Procedure was different to other written Dutch.

The second project was concerned with semantics in which the texts analysed were articles from two Dutch criminal law journals ("Tijdschrift voor Strafrecht" and "Delikt en Delinkwent"). By means of contents analysis, the aim was to measure which subjects in both journals during a fixed period received attention and to what extent.

The third project was primarily concerned with pragmatics based on judges' verdicts (originating from the High Court of the Netherlands and the Central Court of Appeal in Administrative Procedures). The aim was to investigate which factors played a role in those verdicts used in the study and to try to interpolate these decisions on the basis of the factors of each case. Among the factors were the names of the judges participating in the decisions. (This project, unlike the other three, is not complete at the moment of publication of this book and the description of the research in this study is, therefore, of an intermediate nature.)

The fourth project was to ascertain whether it was possible to make certain legal decisions (in this case sentencing decisions) with the help of a computer. The result of this project was a system for computer-aided decision making. The activities which led to this result can be classed as belonging to what Simon terms "the science of the artificial".

Finally, attention is paid to certain social aspects of automation which will be influential in determining the importance of the knowledge of informatics to lawyers. In addition, some scientific prospects of legal informatics are considered. The following conclusions were drawn.

1. As a result of the quick growth in automation in our world, lawyers will be confronted with computers in the practice of their traditional functions. Some knowledge of general informatics is, therefore, indispensable.
2. Computers will be used more and more as an aid in the work of practicing lawyers. The development of possible applications belongs to the province of legal informatics.
3. The study of jurimetrics (see below) will also involve contact with computers. Computers are an important aid in the carrying out of scientific work and this use of computers also belongs to the province of legal informatics.
4. Apart from those questions as to the desirability of using computers which could arise under category 1. (e.g. privacy problems and "computer crime"), questions as to the desirability of computer applications in the theory and the practice of law also arise. In order to answer those questions, knowledge of legal informatics is vital. Constrictions are imposed by a lack of empirical knowledge in the legal field and a lack of agreement as to certain value judgements. (The sort of questions meant here is generally indicated by the term "technology assessment".)
5. Legal texts (i.e. laws, verdicts, legal literature) are technical products, artifacts. The drafting of legal texts which have a particular pre-determined desired effect is an art. This art can be ascribed to the more ge-

neral area of "the art of designing" i.e. the "science of the artificial". In this art informatics will play an important role.

In the development of the largely new branch of empirical science, jurimetrics, the following considerations are of importance.

1. Jurimetrics is concerned with the syntactic, semantic and pragmatic aspects of demands and authorizations issuing from state organizations.
2. Systems theory, or model building, is an important aid in the carrying out of empirical science.
3. Over the last couple of hundred years demands have been put forward by scientific methodologists for the construction of conceptual and formal models of concrete systems (parts of the world of experience). These demands have meant that statements which are made within the framework of a discussion aimed at the acquisition of empirical knowledge must be falsifiable except in so far as the content of the concepts used is fixed by conventions. The concepts involved are empirical concepts (formed according to certain procedures based on observation), or concepts of which the content is fixed by conventions.
4. The observation of the above demands has resulted in the existence of strong and well-established relationships between the concrete systems studied and the conceptual and formal models thereof. In (the syntax of) the formal model, the conceptual model is expressed in an unambiguous manner and, vice versa, some interpretations of the model (a semantic aspect) are known. The conceptual model is built on the basis of empirical data and, vice versa, the result of some tests of the conceptual model (a pragmatic aspect of the formal model) are also known.
5. Such clear and well-established relationships also normally exist between (the syntax) of a computer program, some semantic aspects of it (e.g. the conceptual model designed by the programmer or the translation by a computer into machine language) and some pragmatic aspects (e.g. the way in which the program is executed by a computer).
6. There is little known about the properties of and the relationships between syntax, semantics and pragmatics of legal texts. It is the task of jurimetrics to increase that knowledge. Model building and informatics are important aids in that work.

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