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#### More science than art: Law in the 21st century

Prof. Richard De Mulder and dr. Kees van Noortwijk, Erasmus University Rotterdam

##### Summary

Information technology is changing society in a fundamental way. These changes are not simply concerned with increasing the speed and the scale of communication and other types of processes, but are leading to fundamental changes in human behaviour. The impact on the law is huge; not only as concerns the substantive law but also procedural law and the distribution of power within states.

Today lawyers have to be familiar not only with traditional forms of legal data but also with electronic forms. Digital data means that lawyers will have to learn to work in a more technologically advanced and scientific way. In most disciplines other than law, for example medicine and business administration, this change has already taken place. In addition to teaching the use of information technology, empirical scientific methods and statistics will also have to be taught at law schools and lawyers who cannot use these skills will become obsolete. The scientific, empirical study of the law, known as jurimetrics will become a necessity.

##### The world has changed...

The last twenty years have seen fundamental changes in the state structure of a large number of previously communist countries. It seems that the idea of a (fairly) liberal, democratic state formation has become preferable to one in which the behaviour of citizens must be the subject of centralised control. Some commentators are so convinced of this that the "end of history" has been announced. At the same time, "marketing thinking" has made a huge headway. Exchanging goods and services via the market mechanisms instead of by controlling polices has been shown to more advantageous. The role of information technology in these changes should not be underestimated. The exchange of information is a characteristic of the market. If this information exchange becomes easier and cheaper, then the markets will function even better and become "global". Information directs the processes. However, information is more than this: it has also become a primary product. In societies saturated with material goods, the information industry has begun to have a huge influence on our behaviour. But the same tendency can be seen in less materially affluent lands. The media showed the East-Europeans the way to a market economy. For those in power, such a development is of course not very attractive. It is therefore not surprising that there are still states where the political establishment attempts to withhold information from its people.

There have also been developments in scientific thinking. The success of the market economies has coincided with the acceptance of the basic paradigm (in the sense of Kuhn(1)) which is used to study human behaviour and hence to explain, predict and direct it. Many social scientists and most lawyers base their approach on a sociological image of man. In this theory, man's behaviour will conform to the norms of the group to which he belongs. However, in modern economic theory it is the homo economicus or REMP (resourceful, evaluating, maximising person) which now provides the image of man. Processes are studied from the point of view of methodological individualism. In other words, processes are described, explained and predicted on the basis of the behaviour of individuals. A REMP is a person who wants all his decisions to be of maximum use to himself. Ideologically, this may sound rather denigrating. Modern day newspaper articles accuse the REMP of being a "calculating citizen". Yet in practice this selfishness is not too drastic because REMPs realise that their own interests are better served by taking other people into account. Negotiation is the life blood of the REMP.

In the modern economy (and in its wake business studies), marketing, production management and finance are influenced by rational decision-making. Modern managers talk in terms of expenditure and profit, and of the probability of occurrences taking place. Decisions are made on the basis of knowledge of these variables in the past and the expectations about them in the future.

##### The law is out of step

It seems that the law is now out of step with the speed of development in which the world is involved. Business

administration has gone through a process of becoming more scientific and technologically advanced. The successful businessman is therefore a rational and well-informed decision-maker. Whenever these REMP managers are confronted with legal risks, they need the help of lawyers. In this world of large-scale, international applications of technology, the success of a product launch depends on correctly anticipating legal risks. A recent example is the digital versatile disc (DVD). Its introduction on the market has been delayed by half a year because of legal problems. When a manager consults a lawyer, he can hardly be expected to be happy if the lawyer answers "it might not pose any problems" or "we might win the lawsuit".

Lawyers can expect their clients to become more critical. If a client has to decide whether to start an action, he needs certain information. For example, a client expects to be a 100,000 pounds richer if he wins the action. Before he decides to sue he will want to know what the legal or other procedural costs are (lets say 70,000) as well as the chances of winning the suit. There is no point in proceeding unless the probability of success is at least 70%.

When the enormous amount of data from legal sources in general and case law in particular becomes available in electronic form, it will be easier, in principle, for lawyers to give advice more in keeping with the need of business managers. That is to say, if lawyers will familiarise themselves with the necessary techniques and methods. At present, this has not been the case. It is therefore not surprising that the number of accountants, edp-auditors and the like has grown more quickly than the number of lawyers and the same is true for the revenues collected. Furthermore, accountants and management consultancy firms have started providing legal advice services.

Finally, the market for legal advice is becoming more competitive in most countries. Particularly in Europe, there seems to be a process of opening up legal advice services to others than those who have traditionally had a monopoly in this field. In this competitive market, the use of new technological means and scientific methods could give new entrants a competitive advantage.

### **Jurimetrics**

It was the American Lee Loevinger who launched the term "jurimetrics"(2). He stressed the importance of scientific, and therefore quantitative methods for lawyers. The main stream in jurimetrical research has always been based upon the work of the North American "legal realists". Yet apart from the American publication "Jurimetrics Journal", the work of Stuart Nagel and the occasional contribution by Ejan Mackaay, the jurimetrics front has become rather quiet since the last legal realist (probably Reed Lawlor(3)) stopped being active. Recently there has been a trend to use jurimetrics research for producing legal advice systems. Smith and Deedman, and John Zeleznikov and Dan Hunter are the names that come to mind in this connection. Perhaps it is fair comment to remark that it is the Netherlands where jurimetrics has enjoyed the most interest. Academics such as Franken, de Wildt, De Mulder, Van Noortwijk, Piepers, Combrink-Kuiters, Snijders and Malsch have devoted time to this subject. Before proceeding any further, it is useful to define what is meant by the term Jurimetrics. Jurimetrics is concerned with the empirical study of the law in the widest sense, not only the form but also the meaning and pragmatic aspects of law. Law is defined here as the demands and authorisations issuing from state organisations. This definition holds water theoretically and it defines what the basic object of investigation is for the legal scientists: legal texts.

Jurimetrics research uses a model building approach. By this is meant that an attempt is made to express the theory in mathematical, such as statistical, models. This usually entails quantification, often unavoidable because of the necessity of calculating probability.

There are those who are unhappy with this choice of formalisation as being ideologically coloured. They are probably even more unhappy with the selection of the REMP model as the basis for predicting human behaviour in jurimetrics research. However, there are good grounds for selecting the REMP as the ability of this model to explain and predict is considerable. This choice of basis model does not mean, however, that the achievements of sociology and psychology should be ignored in jurimetrics research. The REMP model gives direction to the research. It makes results easier and more accessible for users in modern organisations with their focus on costs and profits, while it also facilitates the use of knowledge from economics and business studies.

Jurimetrics studies the form, the meaning as well as the pragmatics of the law. Most of the work done in the field has been involved in the systematic and quantitative analysis of judicial decision making. The basic approach was founded by the Northern American "legal realists". By analysing large and preferably representative collections of cases, they tried to predict judicial decision making. Unfortunately for them, the selecting process of adequate cases had to be done by hand and the same is true for the coding of the cases according to the presence and absence of facts. Only for some(4) the computer came to the fore in time to calculate the weights of the facts and to estimate the likelihood of pro or con decisions in future cases.

In this "traditional" jurimetrical research the meaning and the pragmatics of the law are studied. However, it seems that also the form of legal texts should be studied scientifically. In the Netherlands, Kees van Noortwijk has analysed the

word use of large collections of legal texts, concerning statute law as well as case law. He has compared the word use of these texts with general Dutch texts. This research is of practical importance as an aid in the development of more intelligent(5) document retrieval systems. However, it seems that lawyers could benefit by learning more about the properties of their most important instrument, legal language.

It is the empirical, quantitative and economical approach to law that will enable lawyers to come up with advice that will be relevant, reliable and comprehensible to their clients.

#### **Fourth generation law**

The most ancient form of law was spoken law. Even before writing was invented there must have been judges who declared what the law was. Two parties would have put their conflict before a person with authority, who would then have resolved the conflict. The written law gave those in power an instrument to co-ordinate and control the verdicts of the judges. After the invention of the printing press, the law became the instrument of bureaucracy. The electronic revolution, finally, has offered the possibility of digital law. Everything that can be achieved by printed law can still be achieved. However, digital law provides essentially new options as well.

If the properties of spoken, written, printed and digital law are analysed, it seems that, while the written and the printed form are both rigid, the law as spoken by a judge or provided by a legal advice system could be specific to a particular case and notice could be taken of specific arguments. In other words, digital and spoken law would be interactive. On the other hand, printed law and the more recent digital law have made the distribution of legal rules possible on a very large scale, whereas the application of spoken and written law has always been limited.

This analysis leads to the following scheme or "double dichotomy":

#### *Table - 1*

Digital law could take several forms. In order for it to be interactive, it would have to be intelligent. Therefore, in order to be a truly new form of the law, or "fourth generation law", it would have to be in the form of a programmed decision system or decision support system with a certain amount of knowledge about the law. A third form, that of a transaction system, would also be conceivable. In that case, in a certain domain, all transactions must be registered by computer in order to be legally valid. For example, an automated register for equity(6).

Particularly when in the form of a programmed decision system, such a use of fourth generation legislation would have consequences for the balance of powers in the state of law. If a computer programme that has been designed by the legislative power has come up with a decision, and given that the input has been correct, such a decision would be exactly according to the law and it would arguably - not need to be subject to any form of appeal.

Even if digital law would not be taken that far, it is a threat to the balance of power. In the Netherlands, Snellen and Zouridis(7) have investigated to what extent decisions were taken with the aid of computers within the ministerial departments of the central government. It appeared that over 30 % of all decisions regarding the rights or obligations of citizens were made by, or with the aid of a computer. The links between these departments and the legislative power are strong. In a number of cases where the law made decisions by computer too difficult, the law was changed in order to facilitate automation. It has been suggested, that the use of computers for such decision making should be subject to material and formal rules. However, it seems doubtful whether such rules could really prevent the balance of powers from being dangerously disturbed.

The balance of power (or "trias politica") can be analysed in a similar way as the four generations of law. The spoken law implied a judiciary power, the written law a legislative power, while the printed law has led to a large scale administrative power. If fourth generation law is as significant as contended above, it seems reasonable to suppose that a new power will come into existence to supplement the trias politica.

The legislation and the administration are both concerned with initiating and acting, whereas the judiciary power is mainly concerned with supervising and correcting. Furthermore, we have seen that the administrative power is associated with large scale exertion of state power. We are therefore looking for a fourth power that is supervising and correcting as well as associated with large scale exertion of power. Such a power could be called the "monitoring power". Institutions like the government audit office and the ombudsman are probably the first signs of the new power. The increasingly frequent calls for parliamentary investigative committees could be another sign of this.

#### *Table - 2*

The monitoring power would not be concerned with individual cases those would stay within the realm of the judiciary

but with systematic, empirical investigation into the functioning of the other powers, including the judiciary. All the competence needed would be access to all the information that the other powers have access to as well as the competence to interrogate the members of the other powers.

The work of the new power is not limited to arguing on the basis of existing law. The monitoring power will evaluate and criticise the other powers in a general and comprehensive way. Not only the legitimacy, but also the effectiveness and the efficiency would be investigated. Citizens are better off with the ombudsman than with a court for certain complaints. The ombudsman could carry out empirical research into the way civil servants have acted in general and suggestions for improvement could be made. On the basis of these investigations, the citizen could put his case to a judge if that would still be required. Furthermore, for the evidence to be produced with respect to certain complaints, for example in discrimination cases, statistical data are necessary. Especially the victims of such cases would not have the means to produce these data themselves. Finally, for all citizens it would seem to be an attractive prospect if the judiciary would be systematically monitored by an organisation that has the relevant powers and the skills for such monitoring.

In conclusion, the "Tetras Politica" would provide a better balance of power in a time of digital law, but the skills needed for civil servants in the fourth power would not just be traditional legal skills, but empirical and quantitative ones as well.

### **The dangers of the Internet**

In the former section, we dealt with some of the dangers of the use of information technology by state organisations. However, information technology in general and the Internet in particular offer an enormous potential for citizens to evade control. Businessmen as well as ordinary citizens have found numerous ways to break the law with new means. The infringement of copyrights, distribution of pornography, providing the knowledge to make bombs, libel, spreading discriminative statements, stalking, tax evasion, publishing official secrets, financial fraud, illegal gambling, evading import and export rules, everything that states have forbidden seems to be possible by electronic means.

The Internet has shown how limited the powers of the sovereign state have become to deal with undesirable behaviour. Although national laws clearly forbid these acts, it has become practically impossible to enforce the rules. On the one hand this is a consequence of the fact that in most cases civil servants will not have the technological knowledge and skills to deal properly with the problems. Unlike in private business, where the pressure of the market has meant the necessity of staying on top of the technology, this pressure is unknown in state organisations. On the other hand, the enormous possibilities of telecommunication have changed the world in the sense that state borders have become a lot less significant than they used to be. The state can no longer control its territory. The enforcement of national law has become problematic.

It will not be possible to deal with this problem through traditional means. To declare even more behaviour illegal or criminal is almost impossible as well as irrelevant, because the technology makes evading the rules so easy. The only way to re-establish control by the state over the behaviour of their citizens is by making the law more international. Harmonisation of legal systems and co-operation between enforcement agencies will necessarily become more common. Sometimes this process takes place through international negotiation and relative co-operation like GATT, in other cases the economic power of a state leads to an international reception of national rules. (An example thereof can be found in the United States chip protection act.) . If one realises how greatly the Internet will change the world, the perspective of much larger sovereign territories seems to be unavoidable. In the end, the earth might be a one state world.

These changes will also affect the way lawyers work. Harmonisation of the law is pointless if it is only involved with the rules and not with how the rules work. The same rule in one country could achieve a quite different social or economic effect in another. Therefore, in order to make international arrangements for a coherent system of law enforcement, empirical knowledge of the effects of the rules is necessary. This knowledge has to have an international and comparative character.

### **What changes have to be made in legal education?**

To sum up, because the world has changed, the demands of the clients of lawyers will change. Lawyers will have to come up with reliable and valid estimations of legal risks and costs. These can be calculated if the enormous amount of legal data, in particular case law available in electronic form, is studied in a jurimetrical way. Furthermore, the law itself will change into digitised, or fourth generation law. This form of law will be even fitter for large scale exertion of power by states than printed law was already: it will be *interactive*. Due to the potential dangers of this form of law, a new power in the balance of power will come into existence, the monitoring or auditing power. The instruments of this power will also be empirical, quantitative and technologically advanced. Finally, because of the increasing possibilities of international traffic and communication, the enforcement of the law will necessarily become more international and harmonised. This makes international and comparative study of the empirical effects of legal rules a necessity.

To meet the demands and expectations of today's society, the curriculum in law faculties will have to include the use of

quantitative techniques and the methods of the empirical sciences. The economic analysis of law and a study of modern techniques of business administration appear to be important fields. Needless to say, information technology has to be a fundamental part of the new legal education. Finally, as the law will become more international, knowledge of foreign legal systems as well as supra-national law will become a necessary component of the legal skills.

In essence, Loevinger(8) had it all right: "The next step forward in the long path of man's progress must be (...) to jurimetrics which is the scientific investigation of legal problems".

#### Notes

1. T.S. Kuhn, *The Structure of scientific revolutions*, 1970, Chicago/London.
2. L. Loevinger, *Jurimetrics, the next step forward*, 1949, in: *Minn. Law Rev.*, april 1949, p. 455.
3. R. Lawlor, *Personal stare decisis*, 1967, in: *Cal. Law Rev.*, vol 73, p.41. C.f. S. Ulmer, *Mathematical models for predicting judicial behaviour*, 1967, in: J.L. Bernd & A. Jones (eds.), *Mathematical applications in political science*, III, Charlottesville, p. 67. S. Goldman, *Behavioral approaches to judicial decision-making: Towards a theory of judicial voting behavior*, 1971, in: *Jurimetrics Journal*, March 1971, p. 142.
4. For example, Reed Lawlor.
5. "Conceptual" retrieval systems, such as developed by J.C. Smith et al. (J.C. Smith, D. Gelbert et al., *Artificial intelligence and legal discourse: the Flexlaw legal text management system*, in: *Artificial Intelligence and Law*, vol. 3, 1995, p. 55) and De Mulder et al. (R.V. De Mulder & C. van Noortwijk, *A system for ranking documents according to their relevance to a (legal) concept*, RIAO-conference, "Intelligent Multimedia Information Retrieval Systems and Management, 1994, proceedings of the conference, p. 733).
6. De Mulder has suggested that such a system should also be used for recording case law in the Netherlands. The idea would be that no court decision would be valid until it had been made available on the Internet.
7. I. Snellen in: "Beschikking en automatisering", *preadviezen van de Nederlands Vereniging voor Administratief Recht*, 1993.
8. See Note 2.