Legal knowledge based systems
JURIX 93
Intelligent Tools for Drafting Legislation,
Computer - Supported Comparison of Law

The Foundation for Legal Knowledge Systems
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Conference report

Jurix '93

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The Foundation for Legal Knowledge Systems (JURIX) provides a forum for scientists in the field law and artificial intelligence, in the Netherlands. Its members meet on a regular basis to discuss current research topics. Each year, since 1988, JURIX organises an international conference. Last November, the sixth Jurix conference was held. It focused two themes in the field of legal knowledge based systems:
(1) Intelligent tools for drafting legislation, and
(2) Computer-supported comparison of law.

Why did we select these themes from the vast amount of possible themes that may be thought of? In this introduction we will try to answer that question.

The need for high-quality legislation
Issuing legislation is one of the most important means of steering societies. Laws, and other rules, in all kinds of fields, affect the behaviour of individuals and groups of individuals by forbidding, ordering and allowing certain activities and means.
Legislation thus has an important impact on the lives of many individuals and groups. Moreover, since most legislation applies to large groups of people (often the whole population of a country or a large part of it), legislation may also have very serious socio-economic meso- and macro-level impacts.

> For example: in the Netherlands the vast amount of social security regulations forms the basis for a large "social security industry" in which many people have found work and which provides a large part of the Dutch population with one or more social-benefits (depending on the definition of social-benefit 5 to 8 million people of a population of 15 million). The costs of maintaining this system is around 160 billion guilders a year (about 30 percent of the net national income), which is only slightly more than in the rest of the western European countries.

With regard to these important consequences on the micro-, meso and macro level, it is clear that there is a need for legislation to be of high quality.

What is quality of legislation?
Defining quality aspects with regard to legislation is by no means a simple task. To give just an idea; evaluation of legislation may involve demands such as:
- Political feasibility;
- Compliance with general principles like:
    - proper motivation of the legislation,
    - proper compliance with procedures,
    - legal security,
    - equality of rights.
- Effectiveness en efficiency
    - does the legislation lead to the desired effects,
    - does it not lead to other (unforeseen) undesired effects and
    - is it the most cost-effective way of solving the problem?
- Clarity, completeness and consistency (logical and semantically)
- Compliance (or correspondence) with other existing legislation:
    - legislation in other domains;
    - international law;
    - legislation in other countries.
- Practical workability, verifiability, maintainability, possibility of compliance.

The quality of legislation may not always be in the forefront of interest. In the political arena, where legislation is conceived, there may not always be enough interest or time to fully address the quality aspects of legislation.

It is however generally accepted that demands like the ones mentioned above deserve more than marginal attention.

Getting high-quality legislation
In the practice of preparing legislation, effort is put in to comply with the various quality demands, in order to get what we might call high-quality legislation. To assure that new legislation fulfils the demands, legislation proposals have to be evaluated. This evaluation is by no means an easy task. Two major problems can be identified:
1. the problem of making operational the demands by deriving criteria that can be put to the specific legislation, e.g.
2. the problem of testing legislation on specified criteria; i.e. the problem of assessibility and measurability of criteria. When a demand is translated into criteria, it is not necessarily the case that it is easy to assess if a certain legislation complies with the criteria.

Ad 1. the problem making the demands operational
Demands that can be formulated, like the ones above, are generally not of direct use in the sense that they can be tested directly, given a certain piece of legislation. The demands therefore have to be made operational in the form of criteria that can be put to the specific legislation. This translation of demands to operational criteria is by no means easy. Take for instance the demand of clarity of legislation. Can we find a set of specific criteria that, when fulfilled, guarantee that an act complies with the demand of clarity?

Ad 2. the problem of testing legislation on specified criteria
But even when it is possible to arrive on specific criteria to be put to legislation, the problem of testing legislation is by no means solved. Consider the following examples:

> The demand of limited costs is made operational by parliament in the specific criterion that the newly proposed social security act may not lead to higher expenses next year. It is however very difficult to determine in advance what the future costs of new social security act will be because these costs depend on all kinds of factors (e.g. the actual changes that are made in comparison with the currently existing legislation, the development of unemployment figures, the composition of the population, the possibility of behavioural response to the new law by beneficiaries).
> These factors make it difficult to produce reliable estimates for future costs of this act, which means that it is difficult to predict if the new act fulfils the criterion and thus complies with the demand.

> A new complex law on public health-care will be discussed in parliament next week. It should provide clear guidelines for the numerous administrative decisions on individual cases each year. It is therefore necessary that the given rules lead to one and only one decision for each possible case. Because of the complexity of the law it is very difficult to verify that the legislation fulfils this demand. Determining the decision for one case by hand costs at least fifteen minutes, and there are literally tens of thousands of possible cases.

> In view of the new united Europe, it is thought necessary to align the regulation on environmental pollution. The actual realisation of this alignment is terribly difficult. Because in each European country there is an enormous amount of regulation in this field, working with the regulations in only one country is already a difficult task. For comparison of the regulations in two or more countries it is necessary to have expertise over the different regulations of the different countries. Such a broad expertise is simply not available.

Knowledge Based Systems: the road to high-quality legislation?
A knowledge based system is a computer program that contains knowledge concerning a certain domain. This knowledge is stored in some formalised form, in such a way that

the system itself can automatically apply this knowledge. By applying this knowledge it may help to solve problems in that domain.

For instance, a knowledge based system that contains knowledge about tax regulation can support a person filling in his tax forms. It may even help him to avoid paying to high taxes by showing different methods of deducing expenditures, and computing the best method for his specific case.

No, we do not think that all problems around quality of legislation can be solved by introducing knowledge based system techniques in the process of preparing legislation. What we do believe is that knowledge based systems techniques could be helpful in the way that they can be used to remove some of the limitations that are now preventing the realisation of high-quality legislation. Knowledge based system techniques can in our view especially be helpful in at least two ways:

a. Knowledge based systems may be used to bring necessary information and knowledge into the process of analysing legislation (e.g. knowledge about the working of existing legislation in other countries);

b. Knowledge based systems techniques may be used to automate tasks that demand the application of knowledge but that because of their nature can not (or only with difficulty) be performed by humans (e.g. the finding of logical inconsistencies or the exhaustive testing of new legislation by applying it to thousands of possible cases).

Computer-supported comparison of law

As already mentioned in the beginning of this introduction, this conference has two main themes. The first theme is "Intelligent tools for drafting legislation" I hope I have made clear why we choose this theme.

The second theme is 'Computer-supported comparison of law'. This second theme can be viewed as a subtheme of the first. We believe knowledge based systems can be especially useful in comparing legislative alternatives. Within one country, intelligent computer programs may be used to gain insight into differences and similarities between alternative designs for one act (as I showed in my thesis, Svensson, 1993).

But the possibilities are even greater if we look at the problem of international comparison. International comparison of law is becoming an ever more important aspect of analysing legislation, not only in the context of the European community but for our whole 'global village'. International differences in legislation can be shown to give all sorts of problems; just think about the problems that arise from different tax-regimes (e.g. smuggling), different penal laws (e.g. problems with drugs traffic and exchange of prisoners) or different social-security systems (e.g. problems social-welfare immigrants or with the international competitiveness of some countries).

It can be seen that there is an increasing need for all countries to adjust their legislation to the international standards, and especially to the legislation of their direct neighbours.

Detailed comparison of legislation, needed to be able to adjust legislation in the right direction, however proves to be very hard. There are virtually no experts that have deep knowledge about the legislation in a certain domain in the different countries, and bringing together experts from different countries is very expensive and not always to efficient.

Knowledge based systems may offer important advantages in comparing legislation. They can help to make available specialised expertise the legislation in different countries, thus making comparison more efficient and (hopefully) more effective.

The contents of this book

This book contains the proceedings of the Jurix '93 conference which was opened by M.J. Cohen, State Secretary for Education and Science, in the Netherlands. The conference is organised around two themes. The first theme 'Intelligent tools for drafting legislation' is introduced by dr. Ph. Eijlander of The Netherlands' ministry of

Justice. The second theme 'Computer supported comparison of law' is introduced by J.A.M. Berghman, Professor of Social Security Studies in Tilburg.
Unfortunately, due to the tight time-schedule for publishing, the opening lecture by M.J. Cohen and the introduction by J.A.M. Berghman, are not included in this book.

Programme and organization of Jurix '93

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