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Editors:

C.A.F.M. Grütters

J.A.P.J. Breuker

H.J. Van den Herik

A.H.J. Schmidt

C.N.J. De Vey Mestdagh

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Mr. C.N.J. de Vey Mestdagh
University of Groningen, Faculty of Law
Oude Kijk in 't Jatstraat 26
P.O. Box 716
9700 AS Groningen
Tel: +31 50 3635790/5433
Fax: +31 50 3635603
Email: sesam@rechten.rug.nl

AI-TOOLS, POLITICS AND LEGAL THEORY

A.H.J. SCHMIDT

Department of Law and Computer Science and Leiden Institute for Law & Public Policy, Leiden,
The Netherlands

J. VAN BESOUW

Icim (Informatics Centre for Infrastructure and Environment), Rijswijk, The Netherlands

Summary

This paper discusses a few of the questions that the use of computer-based tools in administrative practice poses to politics and to legal theory. Two of these tools will be presented as case studies. Hard political and legal-theoretical questions may need reconsideration since some of the delicate balances, vital to the constitutional state are being challenged by information-technological developments. Our analysis focuses on the identification of those topoi where leverage is already felt or where it is to be expected in the near future. The potential of information-technological tools is immense but are we ready to face the consequences?

1. Introduction

The last decennia have shown the applicability of computer-based tools to be virtually without any limit. Some applications within the legal practice have proven possible. We describe two examples of such applications. One system (JES) is already in use, the other (CIS) has by now been on the planning board for four months. Status, background, chosen solutions and foreseeable pitfalls of these systems will be discussed in Sections 2 and 3. Further analysis of the case studies reveals that the growth of knowledge will provide a serious cause for political debate and for revisiting some well-known legal-theoretical issues: the relations between what is known to be possible and what ought to be done about it. In Section 4 we discuss these relations and conclude that the role played by information technology requests serious democratic attention and debate. In Section 5 we take part in the debate, anchoring our argumentation at the foremost equilibria that have proven to be useful for (democratic) political and legal-theoretical stability. We mention (a) egalitarianism vs. individualism, (b) checks & balances and (c) perfectionism vs. liberalism. In Section 6 we present our conclusions.

2. JES

As a first case study we examine an expert system supporting the process of providing licences for the discharge of effluent on the Dutch surface waters. The expert system is called JES, standing for "Juridisch Expert Systeem". It has been developed by Rijkswaterstaat (Ministry of Transport and Public Works) and Icim (Informatics Centre for Infrastructure and Environment). By now JES is a system in full operation.

2.1. Background

One of the assignments of Rijkswaterstaat is the granting of licences prescribed in the Water Pollution Act (Wet verontreiniging oppervlaktewateren, WVO). The object of the Act is to oppose and prevent the pollution of water. To achieve this the discharge of effluent is regulated by licences. Discharging into open water without a licence is forbidden, for domestic as well as commercial waste water. Indirect discharge via sewers

is also regulated by way of licences. The drafting of a specific licence depends on a combination of disciplines. On the one hand juridical expertise is needed to ensure that the licence is juridically correct. On the other hand technical knowledge, i.e., knowledge of the substances and techniques used in households and in industrial processes, is necessary to be able to assess the pollution and countermeasures to be taken.

The authorities aim at adapting the services to the needs of the citizens and at rendering high quality services. For the granting of licences this means procedural correctness and insight into the enforcement of the procedures, correct licences and rapid processing of the requests. The current licence-granting practice does not fulfill these goals due to two problems: (1) legal verification and (2) regionally diverging licence-granting policies.

1. The greater part of the licences is granted by technical experts exclusively. It is mainly based on precedents (notably on similarities in processes and substances used). In some cases the outcome is legally incorrect because technical experts do not always possess the required juridical expertise. Verification by professional jurists is therefore necessary, but not comprehensively performed due to governmental expenditure restrictions.
2. Rijkswaterstaat is divided into regions. Discrepancies between regional licence-granting policies have emerged. Uniformity in licensing policy between the regions is a goal set by the competent administration (Rijkswaterstaat itself). This goal has proven hard to be achieved by conventional means.

2.2. The solution

2.2.1. Legal verification

One of the main problems that leads to the lack of verification is the workload of the jurists. Their capacity does not allow the verification of all licences. Taking on extra jurists is not possible because of the restrictions in governmental expenditure. The solution chosen provides for standardization of relatively simple licences in such a way that only the complex licences remain to be verified by jurists. (The distinction between standard cases and hard case is non-standard, consequently the preliminary categorization is performed by the jurists).

Standardization of relatively simple licences is achieved by JES [Van Adrichem, 1992]. JES consists of two distinguishable parts, a reasoning part and a presentation part. The reasoning part is an expert system in which rules lead to conclusions. All kinds of procedural and technical aspects are considered. Per request a communication session is necessary in which all relevant data of the request are being asked. The questions are the same as those on the application form. The data are used to derive conclusions, of which the most important one is whether or not a licence can be granted. The expertise realized in JES, both juridical and technical, is elicited from the experts of Rijkswaterstaat. The presentation part is a separate program which communicates with the knowledge base. The program decides, depending on data retrieved from the knowledge base, which texts are to be used. JES produces text models of licences for standard cases in word-processing format; they only need to be printed and signed. However, the word-processing format allows the users to append and edit the text, using a standard wordprocessor. This feature may in the future prove useful to prepare the standard parts of complex licences, and to append the more complex articles.

2.2.2. Discrepancies in policies

Standardization makes it possible to speed up the correct processing of the simple licences, thereby creating capacity for the processing and the legal verification of complex

licences. As an added bonus, it concurrently solves, for standardized cases, the problem of discrepancies in licence-granting policies between the different regions. We do not see a problem regarding diverging policies in hard, complex or non-standard cases. For these cases there is, *qualitate qua*, no policy available at all (cf. for the elaboration of an analogous problem Section 3.1).

2.3. The pitfalls

2.3.1. User friendliness

The WVO is a fairly broad law. To represent the complete law at once is impossible. The first selection of subdomains has been made in mutual agreement between Rijkswaterstaat and Icim. The restriction to a subdomain made it possible to show results in an early stage of the project, enhancing the acceptance by users. In a later stage other, more complex, parts were added to the knowledge base. The choice for a user friendly system (combining Nexpert Object and WordPerfect under MS Windows) further helped to facilitate the acceptance by potential users. The complexity of the system does not show, and does not make the system's behaviour incomprehensible.

2.3.2. Knowledge elicitation

The knowledge of the experts is not easy to obtain. Most of the technical knowledge is implicit. The explanation of technical features to non-technicians is very difficult. The explanation of implicit technical knowledge, derived from experience, to non-technicians is an even harder problem. The same goes for explaining juridical knowledge to software engineers. These processes bear in themselves the risk of building an invalid expert system. The communication between the experts and the developers is therefore the most important factor in a successful realization of such a project. Moreover, in creating the knowledge base we found that reflections that should play a part in the granting process are often left out, because of miscommunication between experts. Relevant rules known to experts of one of the disciplines proved to be totally unknown to the other.

The juridical correctness of the system depends on the information the jurists provide during knowledge acquisition. They are responsible for interpreting the law and incorporating jurisprudence. This also holds for the technical correctness, it depends on the skills of the technicians. Consequently, the responsibility for assessing the correctness of the granted licences remains with Rijkswaterstaat because it is the competent governmental body, as well as the provider of the expertise.

2.3.3. High-quality aims and perfection

The interpretation of the law by machine needs to be pragmatic. The law is designed to be suitable to all conceivable circumstances. We find the law to describe exceptions on normal ruling, and possibly exceptions on the exceptions, etcetera. Although this allows us to use a well-known and straightforward representation formalism (production rules), exceptions on exceptions can make a system unworkable while it takes a large amount of effort to incorporate all these exceptions (Oskamp, 1990). The solution we chose is to find a compromise between the high quality aimed at and the available law-modelling capacity by not incorporating exceptions that hardly ever occur (according to our experts). High quality does not equal perfection. Consequently, we may rely on JES to handle correctly simple cases that occur frequently. All other cases are considered to be non-standard and should be recognized as such during the preliminary categorization mentioned earlier.

2.3.4. The pitfalls of the tool being used

The actual use of the system may lead to pitfalls of a different kind which will be discussed more generally in later sections. Here we provide a few JES-related examples. The WVO requires that the quality of the water is considered in the process of granting the licence. The discharge should consequently be balanced against the quality of the receiving water. This could mean that the first ten companies that request a licence receive one because the water-pollution level is still acceptable, and the eleventh company is denied a licence. The competition issues arising between applicants is something that should be considered.

Another complicating factor is "sustainable development", a concept adopted by the policy makers. The leading thought being that environmental factors can be expressed in economic terms, thus providing the means for hopeful discussions on simultaneous economical growth and environmental preservation. The latter aims at sustaining future society on an acceptable level. The concepts involved should be considered in an expert system such as JES. But since guidelines and practical applications of those guidelines are not yet available and since such an approach would need more data on waterways and interregional effects, political instructions cannot be incorporated in JES at the moment.

3. CIS

The second case study looks into the supply of information and the information interrelationships within the judiciary, in particular with respect to the sentencing of courts in criminal cases. A research project on this subject is defined by an ad hoc project team in which judges, scientists and software engineers participate. Preliminary analyses have revealed the development of a Communication Infrastructure for the registration, provision and development of common Sentencing knowledge as main objective. Hence we refer to the project as CIS.

3.1. Background

Empiricists frequently observe the occurrence of differences between Dutch courts in sentences adjudicated in comparable criminal cases [e.g., Berghuis, 1992]. These differences are unwanted and can contribute to a growing distrust in the legal system by the general public. Although Dutch judges are independent and have considerable freedom in choosing type and weight of punishment, they have to take into account the seriousness of the criminal act and the circumstances of the accused - not their personal taste in these matters.

The differences in sentencing can be explained by looking at the knowledge that is available to judges for sentencing. We distinguish three categories:

- a. *Individual expertise.* This is sentencing knowledge derived from personal experience by a professional judge. With regard to the identification and assessment of personal circumstances of the accused and to the veracity of his motives and intentions this type of knowledge is indispensable. For the greater part this knowledge is intuitive. The personal conviction of the judge plays a decisive role. The same goes for the interpretation of statements of experts and social workers. Ambiguous interpretations are sometimes unavoidable.
- b. *Professional knowledge.* This is knowledge that is generally acknowledged by the professional group of judges as common knowledge. As any professional common legal knowledge, it should be accessible in handbooks, jurisprudence and precedent. Professional knowledge on sentencing is not available in any of these media.

- c. *Knowledge about legal principles.* Knowledge about legal principles is widely published in the traditional media. Judges often have to decide hard cases [Dworkin, 1978] where neither professional knowledge nor individual expertise is available. These decisions are to be taken and with responsibility. The most important criterium for these decisions is normative and involves taking into account the well-known principles regarding the role of judges within the constitutional state, and the social and legal structures which form it. Responsible judgments in hard cases are acknowledged to be based on legal principles of a very general nature which hardly allow straightforward answers.

Individual expertise and knowledge about principles are available in the present day sentencing practice. Professional sentencing knowledge is not. Prerequisite for the possible development of acknowledged professional sentencing knowledge is the case-law publication of relevant circumstances, applied sentences and explicit reasons. However, in published cases, argumentation of sentences is generic and extensionally void: "(...) is in accordance with the gravity of the criminal act and with the circumstances of the accused (...)" has become the cliché argument which is generally approved of by the Dutch High Court. The actual discussion of assessments in sentencing is in Dutch legal practice restricted to the council meeting of the judges, that judge a particular case. The proceedings of these meetings are secret. Accordingly, the exchange of assessments between courts, the debating of cases amongst professional judges is severely limited. This prevents autopoiesis [Witteveen, 1992] of appropriate professional knowledge. Thus, the first and foremost conditions for the development of professional sentencing knowledge are currently not met in Dutch legal tradition.

Consequently, each individual sentencing decision constitutes a hard case and is based on (a) individual expertise regarding assessment of the circumstances of the case and on (b) vague normative principles regarding the adjudication of punishment to assessed circumstances.

3.2. A possible solution

It is expected that the availability of professional knowledge will enhance the rationality of sentencing. The professional knowledge that has to be made available to the judges are records of previous sentences and the assessments and argumentations which motivate the specific sentence. These records can be used by the judges as a tool to study viable assessments and common sentences in later cases.

The first step towards a solution is a database with restricted access in which the sentencing information as revealed in secret council meetings about cases will be stored in text format. This database should be accessible to all (secret) council meetings, thus providing an infrastructure for communication between courts and a medium for the professional debating of sentencing knowledge. It is to be noted that information technology has only very recently come up with tools to realize such an infrastructure.

Since there is no professional sentencing knowledge available as yet, the database will initially lack structure. Therefore, the second step is to gain professional sentencing knowledge from the database. The goal of the research program is to analyze the sentencing information and to find (or create) commonly acknowledged sentencing knowledge in the debate between courts and judges. The outcome of this study can be used for initial modelling and formalization in a knowledge base that can access the database. The resulting system will be used for enhanced study programs and further discussion on the theory and application of the sentencing knowledge.

With changing insights into the professional knowledge the database and the knowledge base have to be adaptable and extendable. Knowledge-representation formalisms will have to be appropriate in this respect. Based on our experience with JES we assume that

the target knowledge will conceptually be structured in the rule-exception format which may be represented in production rules. Knowledge-maintenance tasks will concentrate on handling refinement of exceptions and conflict resolution between them.

3.3. The foreseeable pitfalls

3.3.1. Knowledge elicitation

The most alluring pitfall of the CIS project for knowledge engineers is to assume that professional sentencing knowledge actually exists and to venture it into a model. This attitude is prone to the modelling of an individual judge's expertise that will prove not to be generally acceptable. It has been adopted in an earlier project [Vollbehr, 1991].

Many other pitfalls are for a large part similar to those faced in the JES project. The broadness of the sentencing cases requires that a selection is made narrowing the domains. The communication between the jurists and the developers will, especially at the start, cause misunderstanding and stress. The different teams will have to do their utmost to remain on 'speaking terms'.

The problem of exceptions plays a different role than it did in JES. Here, the exceptions in assessments are essential to the system - nevertheless, how do we notice the exceptions, and to which rules are they exceptions? Another way of looking at this pitfall is that shared professional knowledge may not actually emerge when using and developing the system.

3.3.2. The pitfalls of the tool being used

Assuming the system to be successful, we can foresee its use to lead to pitfalls of a different kind. We mention a few.

By making more data available to judges a situation is created that, whilst they can take notice of professional sentencing knowledge, judges have the responsibility to do so. In other words: a system as proposed could make their task more complex. Therefore, much consideration has to be given to the search mechanisms and to a conceptually transparent knowledge representation.

The basis of sentencing is the notion that there is a choice in every case that can do justice to the personal circumstances and still lead to equality in the sentencing. Of course, the choices are supposed to be made by capable judges. If all assessments can be monitored, judgements can become questionable. This questioning can undermine the credibility of judgements and judges. As a result they may undermine the base of our sentencing. Systems such as CIS may thus save us from the frying pan into the fire. After all, the urge behind the project is the current undermining of our trust in the legal system due to differences in sentencing.

4. Is and ought revisited

Further analysis of the case studies reveals the growth of knowledge to provide a serious cause for a political debate and for the revisiting of age-old legal-theoretical and practical issues: the relations between what is and what ought to be.

Knowledge about what is and about what ought to be is closely interrelated. This interrelationship is bidirectional (a) from what is known towards what ought to be and (b) from what ought to be towards what is known.

4.1. From what is known to be to what ought to be

Legal and political theory agree that no logical relationship can be established between what ought to be and what is known to be. Nevertheless, we seem to generate strong feelings on what we should (not) do, as soon as we find ourselves able to accomplish something due to newly acquired empirical knowledge. Consequently, other, more practical methods for generating normative knowledge have been created, notably democratic procedures. If we know how to destroy the ozone layer we may thus (democratically) answer the question whether we ought to do so. As long as we do not know the ozone layer to be impaired, normative questions regarding the ozone layer are nonexistent. As a matter of consequence, we suggest that the more we know empirically, the more normative questions we have to answer.

4.2. From what ought to be to what is known to be

Legal and political theory also agree that there are limits to the norm-issued constructability of reality by administration. If we have collectively decided that we ought not destroy it, there seem to remain a few problems to be solved in order to reach a state in which the empirical world shows an unimpaired ozone layer. For an effective administration we should, for instance, monitor the production (and use) of all matter that may contribute to changes in the ozone layer. As a matter of consequence we suggest that the more we know about what ought to be, the more empirical knowledge has to be made available in order to procure an appropriate state of affairs.

The relationships between empirical and normative knowledge may provide a vicious circle, where additional empirical knowledge creates a need for additional norms and where additional norms create a need for additional empirical knowledge. An equilibrium in this process will be reached, according to the law of diminishing returns; an equilibrium will be upset if the marginal needs are increasing. Our impression is that especially the communication and registration potential of information technology upsets the existing equilibria because they drastically increase the possible growth of empirical knowledge.

To illustrate our point we present two scenarios, which can easily reduce our promising case studies into nightmares:

JES The development of JES was inspired partly by efficiency needs (which have been met and which we leave outside the discussion) and partly by the normative need to coordinate policies between granting bodies. Consequently, empirical knowledge about the amounts of allowed pollutants has become available. This, in its turn, may pose the question of how much pollutants will be allowed in the environment. After any answer, additional normative knowledge has to be generated with respect to the actions to be taken when the limit has been reached (or has been overshoot). The administration will need additional empirical knowledge to decide on the resulting questions regarding, for instance, commercial competition. Eventually an equilibrium (for instance, around the concept of sustainable development) may be reached. Somewhere during this process, however, it will become clear that the empirical information available can be used for several different purposes, say, by the Revenue Administration. This circumstance may induce the upset of another equilibrium, etcetera. We are confronted with a domino effect.

CIS The development of CIS was inspired by a normative need: the decrease of differences in sentencing in comparable cases. The research for empirical knowledge regarding sentencing policy is induced, which may lead to the increase of normative knowledge regarding sentencing. Here, an equilibrium may be reached. However, the additional empirical knowledge may lead to additional normative questions which could be answered, using the continued

CIS empirical data. It might even be used to judge judges, and accordingly to destroy a particularly delicate balance in a democratic society.

We have directed our scenarios towards the envisionment of serious damage to society caused by vicious norm-knowledge circles. However, we feel that the scenarios mentioned might as easily have been egged on towards utopian results. We have shown that serious practical questions are being posed to democratic societies by the potential of information-technological tools. These problems need democratic attention and solutions, which are traditionally being reached in debate.

5. Equilibria

We briefly review the foremost equilibria that have proven to be useful in a (democratic) political and legal-theoretical debate and suggest the possible upsets issued by information-technological tools. We mention (a) egalitarianism vs. individualism, (b) checks & balances and (c) perfectionism vs. liberalism.

5.1. Egalitarianism vs. individualisation

Equality and individualism are fundamental legal issues. They are institutionalized in the (independent) legislative and judicatural powers, respectively. One of the foundations for these distinct powers is to be found in the amount of practical knowledge available. Legislative generality is based on an assumption of equality that does not actually exist. Appropriate individualization is performed by the judicature, instantiating individual cases to general rules. They are supposed to know the individual circumstances that the legislator cannot possibly take into account.

The emergence of information-technological tools makes the development of common individualization knowledge possible (cf. the CIS project). This type of knowledge may be used by the legislator, again suggesting a shift from judicatural to legislative power. However, the legislator will never be able to predict developments in society and will consequently seldom be tempted to be overspecific in his legislation. We do not see serious dangers needing discussion in this area, provided that the administration and the legislator refrain from using information-technological tools to control the judicature.

5.2. Checks & balances

In the Netherlands, the discussions about the impacts of information-technological tools have for a considerable time been focused on questions relating to registration and privacy. We consider the privacy-registration discussion to be a symptom of marginal trust of the public in administration and vice versa. As such, the discussion has read mistrust in the public's opposition to registration as well as in the administrations picking at the public's privacy. This type of (regularly justified) mutual mistrust has made the democratic society dependent on an elaborate system of checks and balances, most notably explicitated in the traditional distinction of the powers of state (legislator, judicature and administration) and in the positions of the Public Prosecutor and the accused.

Van Gunsteren [1972] has argued severe limits to exist for the effective pursuit of administrative goals. These limits seem, however, to have been stretched by information-technological tools. Extensive registration in itself is considered to be politically neutral. It will facilitate effective administration as readily as administrative abuse of power. Nonetheless, extensive registration suggests a big, simultaneous power shift towards administration as soon as information-technology driven, knowledge-based effectuation is realized. We suggest that these shifts are most likely to be brought about by short-term,

ad hoc problems in society (cf. the current debate on the integration of tax administrations and social welfare administrations in the Netherlands in relation to controlling welfare abuse and illegitimate immigration).

We also suggest that the simultaneous power shifts should neither be discussed ad hoc nor be forgotten in the heat of the moment. It is not immediately clear, however, in what way the administrative power could be checked. Perhaps it can be done by redirecting the emerging registration potential towards the administration itself. Again, a vicious circle seems to emerge. Where and how this will reach (or should be brought to) a stable equilibrium is an existential challenge to today's political and legal theory (and practice).

5.3. Perfectionism vs. liberalism

A perfectionist ethical theory claims universal morality, its scope reaching into the most private of individual actions. Perfectionist ethical theory knows any of our actions to be good or bad, anywhere and all the time. A famous and extremely influential example is provided by Aristotle. Opposed to perfectionist ethical theories are those, that only claim validity for actions that may affect the freedom of others. Perfectionist and liberal ethical theories have bred perfectionist and liberal political parties, who, in their turn, have provided societies with hybrid perfectionist-liberal legal systems.

Prima facie it seems more natural for perfectionist-oriented legal systems to strive for comprehensive registration than for more liberal-oriented systems. History bears out this intuition if we classify the communist systems amongst the perfectionist-oriented and notice their inherent huge administrative overhead. We allow the comprehensive registration in these systems to have brought about an anti-democratic upset compared with our traditional equilibria of power, thus yielding possibilities for abuse that have not been checked by knowledge-based, public discussions of the behaviour of administration itself. We think this bears out our observations in the last subsection. We maintain, however, that extensive registration is in itself politically neutral. It may be effectively used in the pursuit of liberal as well as in the pursuit of perfectionist goals.

6. Conclusions

The growth of empirical knowledge issues the demand of additional normative knowledge and the growth of normative knowledge issues the demand for empirical knowledge. An equilibrium between empirical and normative knowledge demands may be reached. However, recent information technological developments have disturbed the existing equilibrium or will soon do so. As a consequence, power shifts in the trias politica, organic to the constitutional state, will occur. These shifts need serious democratic attention.

7. References

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