Legal knowledge based systems
JURIX 92
Information Technology and Law

The Foundation for Legal Knowledge Systems
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CAN EXPERT SYSTEMS IMPROVE THE EXERCISE OF JUDICIAL DISCRETION?

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Summary

Legal expert systems use a knowledge base of legal rules to address legal issues. Such systems are said to be undesirable (a) because of the difficulty of replicating a multi-textured process such as legal reasoning, and (b) because law in its highest and best forms is humanistic rather than mechanistic. Both of these objections seem particularly apt in the context of the exercise of judicial discretion.
This paper identifies some disadvantages of judicial discretion and some benefits of legal expert systems. By reference to a prototype expert system for making bail recommendations, it discusses how the advantages of expert systems can be used to improve the exercise of judicial discretion and how the perceived disadvantages of expert systems can be minimized or avoided.

1.   The special role of judicial discretion

The formulation and application of rules is a flexible partnership between legislators and judges. In some cases, the legislators play the dominant role in the partnership by specifying most or all of the detail relevant to the application of the rule. In other cases, the legislators specify a limited amount of detail and delegate the responsibility for the remaining detail to the judge. A judge who has some control over the application of a rule is said to have discretion to decide the issues that are left unspecified by the legislator. [Gottfredson, 1988].

Compare, for example, alternate versions of a rule which governs the decision to detain or to release a person pending trial for murder:

*   *Do not release* a person charged with murder.
*   A person charged with murder *may be released* if the person is likely to appear.

The effect of the precision in the "do not release" rule is that the legislature retains control over whether persons charged with murder will be released. The judge's role is limited to ascertaining whether or not the charge is murder.

In the "may be released" rule, on the other hand, the legislator has delegated the decision to release to the judge who must decide what evidence demonstrates risk of non-appearance, and whether such evidence is present in the particular case.

The precision with which rules are stated can vary greatly. Some rules are drawn with very great specificity as to all of the details of their application, and so leave few details to the exercise of judicial discretion. Other rules provide very little specificity, and so involve the delegation of substantial details to judicial discretion.

Each approach has advantages and disadvantages when evaluated against some of the generally accepted goals of rule making and rule application.

1.1. Predictability of outcomes

Rules are made in an effort to bring order to human affairs. The usual expectation is that persons will be aware of rules likely to affect them, and will adjust their conduct and expectations accordingly. A rule without specificity will be less effective in guiding behaviour and expectations than a rule with specificity because of uncertainty over what the rule really means and how it will be applied.

Because the "do not release" rule detains all persons charged with murder, the bail decision is 100% predictable. The "may be released" rule, on the other hand, introduces the possibility of release, but does not give any clear basis for predicting whether or not the likelihood of non-appearance will be found to exist.

1.2. Consistency of outcomes

The high value placed upon the goal of having similar cases treated alike means that rules should be formulated with sufficient specificity to promote consistency of outcomes.

The "do not release" rule produces consistency of outcomes by treating all persons charged with murder alike: none is released. The "may be released" rule is unlikely to result in consistent outcomes among similar cases. Each judge is free to establish a personal view of what counts as "likely to appear". As a result, a case which one judge sees as presenting a likelihood of non-appearance may strike another judge differently. Because the judges are not likely to agree either on the list of relevant factors or on the relationship among the factors, the variety of outcomes will be multiplied.

1.3. Reviewability of outcomes

The partnership between the legislature and the judiciary depends upon the judicial ability to understand the legislation and to apply it correctly. If one of the parties thinks that the original court has acted incorrectly, a higher court can be asked to review the lower court's action.

When the rule in question is one that is fairly specific, the reviewing court may be able to conduct its review by comparing the facts of the case to the statutory rule. An explanation by the lower court often is neither available nor necessary to the review task.

When the rule involves the exercise of judicial discretion, however, a different rule applies for at least two reasons. First, reviewing courts normally require a very clear error before they will over turn the lower court's decision. Second, knowledge of the lower court's thinking can be crucial to the reviewing court's assessment of whether clear error has been shown. So, the absence of an explanation by the lower court will make it difficult, perhaps impossible, for the decision to be reviewed.

 The legislative decision to rely upon judicial discretion in the application of particular rules could be, but rarely is, accompanied by a requirement that the exercise of discretion be explained. In practice, judges rarely volunteer explanations of their discretionary decisions. If the exercise of judicial discretion were routinely accompanied by explanations (either in written or in recorded oral form), however, the disadvantages of discretion could be significantly minimized in some cases.

The individual explanations would provide the parties with information on the factors which were taken into account and the rationale which led to the decision. As a result, parties in some cases would be able to satisfy themselves that justice was done; in other cases, the parties would be able to point to specific areas of concern in the lower court's decision and to request a reviewing court to reconsider that decision. The availability of

the explanation would enable the reviewing court to determine what the lower court's thinking was and whether the lower court's ruling met the clear error standard.

The explanations collectively would enable the public to see what factors were deemed relevant to the application of the rule. Over time, the collected explanations could provide the public with details which would reduce the uncertainty in the meaning and application of the rule. Thus, explanations could provide a predictability comparable in some cases to that provided in non-discretionary rules by the statute itself.

The explanations also enable judges to share the expertise and insights which they will develop while exercising the discretion. Over time, this sharing should have the effect of establishing a collective view of how the rule should be applied, particularly in ordinary cases. While inconsistency could continue in difficult or extra-ordinary cases, the consistency of outcomes in ordinary cases could be improved and might approach the consistency achieved in non-discretionary rules.

The collected detail and expertise revealed by the explanations may assist legislators to improve subsequent versions of the rule. The policies which have emerged in the judicial applications may be explored with a view to extending or altering them. As experience builds, the legislators may be able to increase the specificity of the rule in selected areas. Predictability and consistency could be promoted in non-problematic cases, while individualization could be retained for the difficult or extra-ordinary cases.

1.4. Individualization of outcomes

The variety found in the human condition poses problems for legislators in legal systems which attempt to value the dignity and integrity of each member of society. As a result of the value upon individual dignity, a usual goal in rule making is to ensure that rules are not applied to produce outcomes which are unjust in the particular circumstances.

Rules, such as the "do not release" rule, which set precise and inflexible parameters may be satisfactory in the usual case because they are easily communicated to users and are easily applied in a consistent manner by different judges.

A disadvantage, however, is that the specified rule may be harsh and unsatisfactory in a range of special or unforseen cases. Although a serious charge, murder sometimes involves defendants who present little risk of non-appearance. The "do not release" rule, however, detains whether the risk is high or low.

The technique often used to achieve individualization of outcomes is to give the judge discretion to adjust the application of the rule to avoid unjust outcomes. The "may be released" rule is one example of delegated discretion.

1.5. Summary: the risk of injustice

Rules relying on judicial discretion to achieve individualization of outcomes present a set of advantages and disadvantages which are the reverse of those seen in rules without such discretion: individualization is an advantage; the disadvantages include outcomes which are unpredictable, inconsistent, and difficult to review.

So, no matter how the legislature has allocated control over policy in a particular rule formulation and enforcement partnership, the risk of injustice exists: either from problems with individualization or from problems with predictability, consistency, and reviewability.

2. Some relevant characteristics of expert systems

A short and simplistic, but initially useful, definition of expert systems is: expert systems are computer programs which attempt to mimic human thinking. One difficulty with the definition is the suggestion that human thinking is or may be a single uniform process. In fact, human thinking involves a great variety of tasks, many of which are beyond the power of current computer technology. Even legal thinking (which is just one sub-class of human thinking) involves a range of tasks, some of which are not currently computable.

The question presented here is:

   *   Can an expert system be used to 'compute' the exercise of judicial discretion?

2.1. Potential benefits

Essentially, the benefits sought from building a legal expert system would be to reduce the disadvantages of discretion while retaining its advantage [Pethe, 1989][Simon, 1989].

2.1.1. Predictability and consistency of outcomes

Both predictability and consistency flow from rules which clearly indicate how they are to be applied. The development of a set of clear specific rules is an essential step in the construction of an expert system. If such a set of rules is developed for the system, then predictability and consistency of outcomes will be inevitable consequences.

The initial difficulty in discretion cases is that something about the subject matter of the rules has caused the legislature to leave some details of application to the judiciary rather than to specify them itself. The judicial discretion technique is used in a number of different circumstances.

The legislature may be uncertain what rule to adopt, and may think the rule should be worked out in the context of real cases. Or, perhaps the legislature thinks that the relevant factors are too numerous, too unpredictable, or too complicated to be captured in the rule text. Alternatively, the relevant factors may be unknown at the time of the rule making, or undergoing a process of change which makes their specification premature.

Although the legislature may have refrained from specifying details of how the rule is to be applied, the court is not able to do the same. Faced with a particular case, the court will have to decide one way or another. The decision selected will have the effect of supplying some or all of the details ducked by the legislature. So, in theory at least, the decisions to release should collectively provide some indication of the circumstances under which non-appearance seems unlikely; the decisions to detain, on the other hand, should indicate the circumstances under which non-appearance seems likely.

However difficult the task of specifying the omitted details would be, the details must be capable of specification or the court would be unable to make the decisions delegated to it. Details capable of specification by courts should (at least theoretically) be capable of specification by appropriate experts for purposes of forming the rule base of an expert system.

Assuming that the expert's specifications are reliable and authoritative (a point returned to below), any expert system based on the specifications (and indeed any reader of the specifications) will know how judges will exercise their judicial discretion in a particular

case. Persons affected by the rule will be able to make reliable predictions of how the rule will be applied.

The task of specification is not a trivial task for at least two reasons. First, identifying a set of rules which accounts for all foreseeable combinations of circumstances can be a daunting undertaking.

Secondly, because any two judges are likely to see the same controversial case differently, no single set of rules devised by an expert will authoritatively represent the prospective decisions of all judges. While this problem probably can not be solved in every area of judicial discretion, a potential solution has been devised for the bail expert system described below.

2.1.2. Reviewability of outcomes

A standard feature of expert systems is an explanation or report option. When the option is selected, the system generates and prints a document that explains the system's conclusions. Normally, the document (which is usually available instantaneously) includes a listing of all input data about the current case, a statement of the system's conclusions or other outcomes, and a listing of all rules used by the system to reach the outcome. In many cases, the explanation document could serve as the lower court's record of its action and so provide the information needed for effective appellate review of the decision. In other cases, the explanation plus judicial notes could together provide the record needed for review.

2.1.3. Individualization of outcomes

The value of individualization is that rules are applied in a way that adjusts outcomes in accordance with relevant variations in circumstances. This value is not promoted by differences in outcome that are random (i.e., decided by tossing dice, flipping coins, or other chance methods) or that are arbitrary (i.e., decided without reference to the circumstances). So, the elimination of outcomes that are attributable to randomness or arbitrariness is desirable.

Whether the expert's set of rules has the effect of producing undesirable reductions in the level of individualization will depend upon at least two factors.

One is the extent to which all relevant circumstances are identified by the expert and included in the set of rules. If all relevant circumstances have been captured in the rules, then each case will be evaluated according to its circumstances. No further individualization is necessary.

A second factor is the role that the expert system plays in the ultimate decision. If the expert system produces the ultimate decision, then the system's inability to process one or more relevant circumstances will mean that the decisions have been reached without considering all relevant circumstances. Some decisions will, as a result, not be completely individualized. Whether the deficiency is major or minor will depend upon the number and the nature of the omitted circumstances.

The failure of the expert system to process all relevant circumstances will be less important if the system produces a recommendation rather than the ultimate decision. The judge could use the recommendation as a starting point and make adjustments which would take into account any circumstances not processed by the system.

2.2. Resource considerations

A separate concern question is whether the perceived benefits of the proposed judicial discretion expert system can justify the commitment of the extensive resources that will be required. For such a resource commitment to be justified, the judicial discretion issue selected for expert system treatment would have to be one with a high volume and a high priority.

3. Using a prototype expert system to make bail recommendations

3.1. The bail domain

A person accused of a crime can be kept in custody until trial, or released with or without conditions. The decision is usually made by a judge or magistrate.

The (English) Bail Act 1976, s. 4., specifies that the decision should turn on whether or not there are "substantial grounds to believe" that the accused will fail to appear for trial, or will re-offend pending trial. In Schedule 1, it says that the information to be considered should include facts about the accused (prior record, community ties, character), and about the offense (its seriousness, the weight of the evidence, the likely sentence).

The decision to detain an accused prior to trial is often made in moments. Indeed, the speed and off-handedness of the court's ruling can made the decision appear to be trivial.

But the decision to detain is never trivial to the accused who inevitably suffers a variety of adverse consequences [Alschuler, 1986][Ares, 1963][Freed, 1964][Hassett, 1992]. The accused's loss of liberty and associational rights, on the one hand, and the enormous cost to the state of housing thousands of detainees, on the other hand, combine to make the bail decision one deserving of a very high priority. In addition, the bail decision is a very high volume decision in jurisdictions which (like England and Wales) process over a million criminal cases a year.

3.2. The predictability and consistency of bail outcomes

The result of the Bail Act requirements is to give the decision maker very great discretion over the detention-release decision. As a result, the predictability of, and consistency among, bail decisions is low.

A study of bail decisions [Stone, 1988] revealed that persons accused of theft were held in custody pending trial in 1 out of 2 cases, but persons charged with failure to appear (after release pending trial on one or more other charges) were held in custody pending trial in only 1 out of 3 cases. Surely the detention rate for those who have failed to appear already should be higher than the detention rate for those who merely present a risk of non-appearance?

The prototype was designed to demonstrate that an expert system might be a useful way to promote predictability and consistency in the bail domain. The first step was to identify the issue to be used in the prototype. The Bail Act 1976 identifies two primary issues to be considered: the risk of non-appearance and the risk of re-offending. The prototype focuses only on non-appearance.

To further reduce the scope of the prototype, only one class of cases is addressed: criminal offenses punishable by a maximum of six months in jail. While these offenses

are not particularly serious, the class is worthy of attention because it is the largest single class of cases.

The starting point was the Bail Act's statutory factors which were examined for their rule generating potential. For each factor, a reasonably accurate measure was sought: prior convictions (if any) and prior incidents of non-appearance (if any) could be counted; seriousness of the offense could be measured by the maximum penalty authorized; ties to the community could be said to exist or not. Two statutory factors, strength of the evidence and character, were excluded from the rule system because no reliable measure of either could be identified.

Even where measures were identified, the measures are not unproblematic. For example, the seriousness of the offense involved in any prior conviction may be more important than the mere number of convictions. Moreover, the age of any prior conviction may be important, with newer convictions deserving of more negative weight than older convictions [Roballo, undated]. Finally, accurate data may not be readily available [Gibb, 1990][Note, 1990].

The rule generation strategy for the prototype was to use simple measures where possible in order to reflect: the relatively low level of offense; the need to process large numbers of cases; the limited fact gathering resources; and the pressure for quick decisions. The goal of the system was to provide outcomes that were better than existing outcomes. Given the haphazardness of the existing system, any sensible system would, despite the crudeness of its rules, be likely to be an improvement. However, the possibility that more sophisticated measures might be needed was noted for further consideration during field testing of the prototype and during the expansion of the prototype into more serious cases.

For each included factor, all possible fact situations were compressed into two or three values. Sample compressed values could be: NONE, ONE-THREE, and FOUR OR MORE for prior convictions, and NONE and SOME for communities ties.

All statutory factor values were related to the risk of non-appearance:

  * If the likely sentence is CUSTODY,
     Then the risk of non-appearance increases.

Then, each rule was justified by a 'because' statement which explained its rationale.

  * If the likely sentence is CUSTODY,
     Then the risk of non-appearance increases,
     Because accuseds are more likely to flee from the prospect of CUSTODY than from the prospect of NOT-CUSTODY.

The 'because' statements reflected the builder's experience in criminal cases (7 years prosecuting and defending, 17 years teaching criminal law and procedure), the findings of social science studies [Ares, 1963][Freed, 1964][Goldkamp, 1985][Scott, 1989] [Stone, 1988], and the field experience of a small group of criminal justice participants (including sitting judges, probation officers, and attorneys) who reviewed the rules and 'because' statements.

The 'because' statements assisted in establishing relationships among rules:

  * If prior convictions are FOUR OR MORE,
     Then the likely sentence is CUSTODY,
     Because the sentencer is likely to think that the accused will not benefit from a non-custodial sentence.

    * If the likely sentence is CUSTODY,
       Then the risk of non-appearance increases
       Because accuseds are more likely to flee from the prospect of CUSTODY than
       from the prospect of NOT-CUSTODY.

The examination of the statutory factors and their relationships to risk of non-appearance led to the conclusion that the risk of non-appearance was dependant upon two intermediate risks: the risk of inadvertent failure to appear (because of misunderstanding or lack of communication) and the risk of intentional failure to appear (because of fear of prosecution and penalty).

As a result, each statutory factor was analyzed to see whether it was relevant to the risk of inadvertent non-appearance (lack of permanent address to be used to give notice of appearance dates), to the risk of intentional non-appearance (likely sentence of custody), or both (employment which can provide a contact point for appearance dates and which gives the accused something to loose in the case of flight)

Where one factor was dependent upon multiple other factors, matrices were used to integrate the impact of the independent factors on the dependent factor.

For example, the ultimate issue of *non-appearance* was dependent upon the risk of *intentional non-appearance* (assigned three values: HIGH, MEDIUM, or LOW) and upon the risk of *unintentional non-appearance* (also assigned three values: HIGH, MEDIUM, or LOW). The matrix for integrating the possible values of the two factors is shown in Figure 1.

		The *Inadvertent* Failure to Appear Value:		
		High	Medium	Low
The *Intentional* Failure to Appear Value Is:	High	HIGH	HIGH	HIGH
	Medium	HIGH	MEDIUM	MEDIUM
	Low	HIGH	MEDIUM	LOW

Figure 1: The risk of non-appearance

The values assigned via this matrix to the *risk of non-appearance*, and via other matrices to other factors, are estimated values rather than scientifically determined values. Experience may suggest that the assigned values need to be adjusted upwards or downwards to achieve the lowest possible level of detentions or of conditioned releases, while also achieving an acceptably low level of non-appearances.

The credibility of the rules was initially a problem because no acknowledged bail expert participated in the rule development. A combination of techniques was use to overcome this difficulty. First, a 'because' statement explained the rationale for each rule so that all rules are fully transparent. This lets prospective users make their own judgment as to the validity of the rules.

Second, the plan for the development of the prototype provided that the rules (including the 'because' statements) would be reviewed prior to field testing by a committee of judges. The participation of the judges would ensure that the rules did not depart from standard practice in unacceptable ways. The judges committee would also help to develop more uniform views as to what the rules should be.

Third, the set of rules was presented as a beginning point rather than as an ending point. Since the rules are intended to help assess the risk of non-appearance, the field testing plan contemplated that the validity of the rules would be established by the actual incidence of non-appearance (and the reasons for the non-appearance if known). If non-appearance numbers were too high, the committee of judges would tighten up the rules; if too low, the committee would relax them. Even after the rules had been adjusted to produce an acceptable level of non-appearance, the committee would keep the rules under periodic review [Goldkamp, 1985].

Because the proposed committee of judges would have a continuing role in the oversight of the rules, judges consulted thought that the rules would be more acceptable to other judges generally. The fact that the rules would be evaluated by judges against non-appearances would also promote judicial acceptance. As the level of judicial acceptance increased over time, the predictability and consistency of outcomes would show a corresponding increase.

The comprehensiveness of the set of rules also presented an initial problem. The goal of identifying and including all circumstances relevant to the bail decision had to be abandoned when the incomplete list of such circumstances became unreasonably large. The system would not be seen to be useful if the kind and amount of data which needed to be gathered and entered in each case exceeded the time and resource capacity of the intended users.

In the end, the system was limited to the statutory data which would usually be available and relevant in every case. Many cases would involve only statutory data; the outcomes in these cases should be reasonably predictable and consistent. The limitation to statutory data would, of course, mean that the predictability and consistency of outcomes would be lower in cases involving circumstances or factors not included in the statutory data.

3.3.   The reviewability of bail outcomes

Bail decisions are often made on unrecorded oral representations by the parties. The judge makes the decision in a matter of moments. The press of large case loads prevent judges from providing explanations of their bail decisions. These are among the factors specific to bail which mean that bail decision are rarely reviewed. [Scott, 1989]

The clear error rule which applies to appeals in discretion cases also contributes to the infrequency of bail review applications. Counsel for an accused may advise that limited defense resources be devoted to the merits of the case rather than to a procedural long shot.

One consequence of infrequent bail reviews is that the rules in the bail domain receive very little systematic scrutiny. The inattention is particularly surprising given that the bail decision is probably the single highest volume decision made in the judicial system.

The expert system may be able to improve the reviewability of bail decisions by providing a quick and comprehensive explanation of the bail decision. The basic data is entered on the system by a staff person (perhaps a Bail Information Project probation officer) in advance of the first appearance. If necessary data is unavailable, the system supplies default values (some of which favour the accused, and some of which don't). When the available data has been entered, the system is run to generate its preliminary recommendation and explanation.

The preliminary explanation report is given to the bail judge, to the prosecution, and to the defense. The report identifies the facts that were entered, the rules that were applied, and the recommendation that the system generated. At the bail portion of the first appearance, the judge should ascertain that the entered facts and default values are

correct. New or corrected information supplied at this stage can be entered in the system on the spot either by the judge or by staff. The system can then issue a new recommendation and explanation (which takes only seconds).

Where the judge decides to accept the recommendation, the system's explanation can serve as a complete record of the decision. The judge is not burdened with the need to make any oral or written explanation. The court does not suffer any delay during the preparation of the explanation.

Where the case involves circumstances in addition to the statutory ones, the system's explanation does not represent a full record of the decision process. The mechanics of recording the post explanation steps in the decision process are still being worked out.

3.4. The individualization of bail outcomes

Many bail decisions involve circumstances which fall within the statutory factors and which are taken into account by the bail system's rules. Some cases, however, involve special circumstances which fall outside the system's rules. For these cases, the individualization of the bail outcomes will provide important protections.

The technique used to provide individualization is to characterize the system's output as a recommendation rather than a decision. The judge then has a duty to decide what decision to reach.

In the cases involving special circumstances, the judge will need to assess whether the special circumstances change the risks of non-appearance, whether any change increases or decreases the risk, and the extent to which the recommendation should be adjusted to reflect the change.

Even in cases which fall within the rules of the system, the output of the system is characterized as a recommendation, not a decision. So, before adopting the recommendation, the judge should be sure that the recommendation is appropriate under the circumstances.

The judicial review of the recommendation is important to ensure that the machine does not usurp the independent judicial assessment that is essential to fair treatment.

4. Concluding comment

When originally proposed, the idea of building an expert system to operate in the area of judicial discretion was rejected because it seemed unlikely that a computer could replicate legal thinking processes and because computerized justice seemed inconsistent with notions of non-mechanistic justice. Similar objections were made to the idea of an expert system in the bail domain of the criminal justice system. Many of the objections raised legitimate and important issues.

The bail expert system as presently conceived answers some of the objections. Other objections await appropriate solutions. But the prototype system does give some support to the view that a narrow system which pinpoints a specific problem of judicial discretion may be able to make a useful contribution by improving the quality of discretionary decisions while retaining the benefits of humanistic justice.

5 . Acknowledgement

6 . References

This article may only be cited as: Hassett, P., Can Expert Systems Improve the Exercise of Judicial Discretion? In: Grütters, C.A.F.M., J.A.P.J. Breuker, H.J. van den Herik, A.H.J. Schmidt and C.N.J. de Vey Mestdagh (eds), *Legal Knowledge Based Systems: Information Technology & Law, JURIX'92*, Koninklijke Vermande, Lelystad, NL, 1992.

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