Sentencing – can the computer help?*

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Introduction

In the 7(1) issue of *Acta Criminologica*, the writer published a comprehensive discussion of sentencing movements in the United Kingdom (UK) and the United States of America (US). The discussion followed a historical path and culminated in a comparison of the UK 1991 Criminal Justice Act and the US Minnesota and Oregon Guidelines Grid.

What became apparent from this discussion was the realisation that sentencing has become an area which is beset with problems, both in terms of what sentencing aims at achieving and in terms of its ability to reach those aims within the organisational arena of juridical policy.

A brief résumé of the discussion originally undertaken

A comparison between the UK and the US sentencing policies was undertaken for two reasons: first to test for what Malcolm Davies (1993) suggests is a ‘common theme relating to

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changes in sentencing policy around the world – the restoration of just desert principles [which] at the same time [endeavour] to restrict the use of imprisonment on fiscal and penological grounds (1993:1); and second, to compare two very different jurisdictions which appear to have similar problems and to evolve from similar ideological backgrounds, and yet can be seen to be undertaking sentencing reform in vastly different ways.

It became clear that, as already noted, the problems faced by both countries in sentencing matters are the same: increased crime figures; more violent crimes; overcrowded prison establishments; variations of sentence between courts as a result of idiosyncratic views, etc. The list of inherent problems in sentencing today is not only considerable, but invariably appears in most literature on the subject as the platform from which sentencing reform must be orchestrated. Both the UK and the US have embarked upon what can be broadly termed a more just-deserts policy towards the sentencing of offenders. The reasons for this are complex and too involved to cover in any detail here. Suffice it to say that in the words of David Faulkner (1993) writers and thinkers on sentencing today ‘rightly or wrongly, [see] rehabilitation and deterrence ... as unrealistic’ aims of sentencing ...' (1993:2).

At the forefront of the debate on sentencing reform is a call from both the judiciary and the public to get tough on criminals, hence an overall movement towards a just-deserts ideology. Getting tough often means sentencing more offenders to longer jail sentences and this is one of the reasons for the overloaded penal system which has to stretch its functions further. But this is only part of the problem.

Another major concern is the economics of more offenders passing through the juridical system; of backlogs and pretrial incarcerations while offenders wait for trial. And an even greater problem is the concern of all those involved in sentencing who criticise what can be broadly termed the lack of a ‘truth in sentencing’. Disparity of sentence dispatches is widespread, even between courts in close proximity to one another (see Parker 1990). Changes in the types and severity of crimes now committed by offenders make the slow process of new legislation aimed at addressal the major hazard of any juridical system looking to reform its policies.

The UK has continued to add pieces of statute to already fractured legislation (see the writer’s previous article for a more comprehensive discussion of this point) in an effort to rid its legislation of unworkable pieces of law. But, as new legislation is brought into effect so the crime situation changes and other problems become apparent. For this reason the 1991 UK Criminal Justice Act has drawn, and continues to draw, much criticism (see Thomas (1993), Faulkner (1993) and others).

On the other hand, the US opted for the introduction of sentencing commissions and has developed sentencing guidelines for sentencers which are now operational in several states in that country. Sentencing guideline grids make sentencing easier and faster for sentencers, but there is still the inherent problem of how to keep up with changes in criminal activity fast enough. Andrew von Hirsch (1993) notes that the increase in drug crimes has ‘forced the commission ... to surrender to law-and-order pressures’ and to change the grids accordingly. Change within the UK system is not as easy as change within the US system (the UK operates a protracted system of committee readings before new legislation can be passed through Parliament). But, whatever, both systems can be argued to be too slow to be really effective in the field.

Finally, the initial article discussed the intermediate sentence options now available to the courts. It was noted that these sentences do help the judicial system to offload offenders into areas other than prison cells (diversion) – thereby having some impact upon the overcrowding of prison facilities. However, the new options still do little to quicken the tortoise-like pace of the system in processing offenders, or to keep ever-rising costs down (community service orders, tagging, proba­tion, etc, are usually very expensive in terms of trained administrators and personnel), or to address the problem of uniformity in sentence.

Overview

According to the literature, these problem areas form the epicentre of mainstream thinking about sentencing reform. Many writers and thinkers (Thomas 1993, Ashworth 1993, see endnote 3, Von Hirsch 1993, Bottoms 1993 and many others) concern themselves with ways to revise sentence options, to lessen prison intake, to re-evaluate parole criteria, to achieve a similar sentence for a similar offence etc. But few, if any, have correlated these problems with either the increased costs of change or the system’s inability to change sentencing law quickly enough while remaining uniform in sentencing practice. Before an attempt can be made to address these areas, it might prove informative to look briefly at the 1991 UK Criminal Justice Act and the US guideline system.
in an effort to indicate where a more systematised organisational approach to changes in sentencing policy may help.

**The 1991 UK Criminal Justice Act**

David Thomas's (1993, see note 2) criticism of the UK 1991 Criminal Justice Act highlights the difficulties involved in taking existing statutes and trying, by adding pieces, to right the wrongs which become apparent as the legislation is utilised. Thomas (1993) suggests that most schemes contain arbitrary areas which lead to anomalies. This is definitely the case with the UK 1991 Criminal Justice Act. For example, the Act legislates for a criminal case to be decided by consideration of one offence only (sometimes two), while the 1991 Traffic Act calls for all cases against a driver to be taken into account when calculating the number of points used to sentence fairly. Both sections of the Act, according to Faulkner (1993), are directed by just-deserts principles and aim at a 'truth in sentencing'. While the criminal case calls for a 'truth' which does not include past sentences (for which an offender has already been punished) to be taken into account, the traffic offence seeks the 'truth' of negligent driving in terms of past offences to award punishment. There is therefore a lack of uniformity in this area and the UK is now endeavouring - via the usual protracted steps (White Papers from government are published and take time for all personnel in the judicial arena to assess) - to address this problem. This gives rise to what Thomas (1993) calls 'piecemeal' changes which in themselves complicate an already complex situation for sentencers. Thomas (1993) offers an example of what this type of change involves.

Thomas (1993) indicates the difficulties for sentencers, who have to take into account the quantity and complexity of past legislation which is scattered among a large number of statutes dating back to 1961. He argues that there is a lack of logical structure and coherence involved in sentencing which has to address such 'quantities' and 'complexities' - noting that Parliament in the UK tends to change penalties in a piecemeal manner. This piecemeal approach to sentencing law reform has resulted in a maze of statutory provisions spread among large numbers of statutes which now bear little resemblance to the provision as originally enacted. Here it can be argued there is a high cost involved in correlating 'piecemeal' legislation, both in terms of court personnel time and diminishing finances. And it is surely difficult to ensure that uniformity of sentence is provided between courts if sentencers have to keep up with backlogs of statutes.

**The US sentencing guidelines**

The US Sentencing Commission faces the same problems in terms of its guidelines. Once the guideline grid is produced change is not an easy process. Von Hirsch (1993) notes that:

For non-drug street crimes Minnesota has been able to maintain [the original] standard ... [because] the Commission accommodated demands for tougher penalties by increasing the durations of punishment for crimes above the in/out line, rather than by moving the line or reclassifying the gravity of the offenses involved (1993:2).

For drug crimes the Commission had to surrender to law-and-order pressures by reclassifying the gravity of drug-selling on the guidelines grid in order to address the sudden steep rise in drug offences and the public's call for tougher sentencing for drug crimes. Reclassification of the guideline grid takes personnel hours, which have to be paid for by the taxpayer through the judicial budget, and extra finances for reprinting and redistribution. But, and possibly more importantly, reclassification involves a time lapse in informing judicial actors of the changes which are coming into effect within the sentencing policy.

For the purpose of the argument developing here, it should be noted that both the UK and the US models work with change as an ever-present variable which needs to be taken into consideration, and sometimes quickly. And it can be seen that when change has to be made there are problems with speed, costs and organisational information circuits to make those changes known to the judiciary.

How might change become more cost effective and quickly achieved? Is it possible to change and still manage to retain the motivation for just desert and truth in sentencing? The writer thinks so. What is needed is a reassertion of the motivation to keep looking for ways in which computer programmes might help: in the process 'rekindling' the momentum for debate.

**The technological age**

**Technology and sentencing**

Today we live in a technological age with many of society's institutions run and organised around the use of computers. For example (in terms of crime), how much less efficient would the police service be without the aid of computers to help cross-match suspects, produce identikit likenesses, check ownership of vehicles and generally process a mass of
information quickly and efficiently? The same can be said of court proceedings where the computer is required to process vast amounts of documentation in a short period of time. Interlinked services rely upon computers to do many of the mundane tasks – upkeep/collation of records in the probationary and social service areas and the production and correlation of statistical material on which to base forward planning. And yet, the area of sentencing is relatively untouched by the 'computer chip'.

The reasons for this are, of course, many. Such reasons range across a spectrum of ideas bounded on the one side by those expressed by Faulkner (1993) and Thomas (1993) about judges' avoidance of any change which might encroach upon their discretion to the notion that sentencing requires the human touch to be both truthful and fair. The writer disagrees – perhaps truthfulness and fairness of sentence can be achieved only within the sphere of machine logic – within an ambit of computerised sentencing. In this respect the US are nearer to a computerised system with their guideline grids than the UK.

What is the computer able to offer?

Artificial intelligence

According to Lauriere (1990:2) the history of the search for an artificial intelligence (AI) spans some 30 years. Its aims during this period have not changed; they still consist of trying to find ways to reproduce what humans understand as intelligent reasoning and action, within the mechanical ambit of machine-like logic. This immediately poses problems in that human intelligence is more easily recognised than defined. As Lauriere notes 'We ourselves do not really know how to achieve most of our activities ... we do not know the precise method ... we use in order to understand a piece of written text, to recognise a fact, to prove a theorem, to construct a plan of action, to solve a problem, to learn something ...' (1992:2). Computers of course cannot 'learn something'; they are reliant upon what one can call layers of knowledge which form their database of pure logic. Such logic requires a systematic set of concepts, a description of relationships among the objects of any framework, a theory, if you like, which offers a set of principles to describe fundamentals – in other words, a 'conceptual' framework.

Therefore, to achieve any likeness to human endeavour the computer has to be able to relate to cognitive elements and to work with specific linguistic nuances. Both areas are frustratingly elusive. The human process of cognition has to do with the science of psychology, with the non-deterministic aspects of problem solving.

According to Kom (1990:3) 'intelligence' in this form has caused philosophers much debate on whether it can be fathomed, let alone fabricated. Linguistics has to do with symbolism and the meanings people choose to attribute to particular words within language. This means that the 'conceptual' framework of any computerised diagnostic tool has to concern itself with symbolic information (that which is non-numerical) – expressed in letters, words, signs, etc – and at the same time organise facts in terms of mathematical precision.

Such a discipline, according to Kohout (1990:184), has to be based upon an interdisciplinary interaction with physiology, psychology, linguistics and logic. To do this Kohout notes that an AI system 'performing actions in an environmental [must] possess an “internal model” of the environment in order to achieve [its] aim' (1990:185). Such action is necessarily closely linked to goal-orientation. This means that computer intelligence has to demonstrate what Kohout describes as 'behaviour [which is] relevant for a theory of action' (1990:185) in terms of specific modalities and hierarchical structures. AI therefore needs to be packaged in what is termed in computer language an Expert System.

Lauriere (1990:1) tells us that 'linguists, psychologists and logicians now programme the models that construct – and biologists, medics and mathematicians are tending to do the same'. He notes that 'AI researchers are taking ... models and [producing] software for solving real-life problems.' So what is meant by an Expert System? Might an Expert System be able to help with the 'real-life' problems of juridical sentencing?

Expert Systems

According to Levine et al (1988:10) 'All elements that comprise the human decision-making process – goals, facts, rules, inference mechanism, and pruning – must be collected in a computer programme for it to be properly described as possessing artificial intelligence.' Very basically, the collation of these 'elements', zoned into a particular goal, forms the Expert System.

As the word Expert infers, experts within a particular field provide the necessary knowledge to form the 'data' input of expert system programmes. Such knowledge and data formation take into account all those elements and concepts previously noted. However, Levine et al caution that the facts and rules needed to reach all goals in
all domains are virtually infinite and one must therefore realise that 'there is no computer yet in existence that can store or process anything even approaching that much information' (1990:21). The authors suggest that while being realistic about such limitations, it is possible to produce an expert system which is capable of ridding any domains of repetitive time-consuming actions. In sentencing processes the undertaking is to release knowledge contained in the expert's mind, convert it into 'computerised language' in terms of goals, facts, rules, inference mechanisms and pruning, and add to these areas the realms of statute and the law.

Such an expert system would answer Thomas's very real problems with the fragmentation of and 'piecemeal' additions to UK statutes. How might the requirements of computer-aided juridical sentencing be achieved?

Computers are capable of storing vast amounts of information/facts and can be programmed to regurgitate this knowledge in logically correct sequence when required to do so. These are the rules of sentencing. The facts of sentencing require the expert's knowledge on crimes within society. The goals relate to our earlier discussion on reduction of prison term, truth in sentencing and consistency, while inference mechanisms and pruning are reduced to the logics of any one specific AI system concerning sentence delivery. These areas form the core of the sentencing domain which could successfully respond to a computerised sentencing programme. The one area which remains problematic is that of the experiential domain. And, even though it is possible to weigh programmes — in terms of pruning — to accommodate sentencers' experience and the mitigating circumstances of a specific case/crime, in the final analysis machines are nonhuman, they do not think and they do not learn. Thinking and learning are human attributes. The computer is capable of 'thinking' only what it is told to think and 'knowing' the moves that it is programmed to know. It is down to humans to devise ways of improving the machine's ability to know more through the input and improvement of complex database information.

With the possibilities of what can be achieved in artificial intelligence within expert systems in mind, a slightly more in-depth look at some of the justifications/negative aspects for computerised sentencing is undertaken. It is noted that problems in formulating computer programmes for specific real-life situations are profuse, but are not, the author would argue, insurmountable within the sentencing domain. According to much of the most recent literature on advancement in computer-aided tasks, the achievements and refinements within AI expert systems are mounting. If sentencing practice does not take up the challenge of utilising these advancements then sentencing reform may 'stagnate' at an even faster rate than at present. Continued efforts to incorporate technology into the real-life situation of juridical sentencing practice have to be made.

The two sections which follow are, by virtue of the author's 'non-expert' status/knowledge in the field of computerisation, basic. It is hoped, however, that the ideas offered may serve to encourage further debate between those more capable and better equipped to offer insights into this very relevant area of research.

**The justifications for computerised sentencing**

The justifications for computerising sentencing are many — definitely too many to do justice to here in a limited space. Therefore the writer offers only a short list of some of the most relevant 'fors' of computerisation to open up discussion:

- **Consistency in sentencing** is essential — not only in a country, but possibly globally. A globally consistent sentencing model might be organised in the same way as the European Economic Community (EEC).
- **Easily adjusted sentencing options/limits** are desirable — instantaneous adjustment between courts (terminals in each court, perhaps?)
- **Easy 'take-up' of precedence in cases which alter the model in terms of mitigating circumstances is needed** — new crimes can be slotted into the programme when and where applicable.
- **Rapid determination of sentence** (simply achieved and in some cases not requiring the specialist knowledge of a judge) is necessary.
- **Once the facts of a specific case are fed into the computer automatic computerised flow stages ensure a 'correct' judgment/sentence.**
- **Weightings could be added to accommodate a judge's discretion and subjective input.**
- **System costs will de-rate because the need for legal learning becomes less** — perhaps ultimately even a clerk will be able to sentence successfully (see above).
- **'Piecemeal' legislation can be programmed into the various computerised sentencing models** — thereby ensuring that all past information/law is automatically taken into account by the sentencer.
- **Uniformity of sentence need not be questioned — every sentencing court would work with the same model.** There would have to be a worked-
out policy to decide which cases go to court for judgment by a judge. The judge could be equipped with a computer terminal which allows him to put facts into the machine as the evidence of the case is revealed. In this way the most serious of criminal cases will still require judgment by a judge, but his and her judgment in terms of sentence will be aided by a computer model.

The computer would be programmed to move through different channels as the evidence of a case is programmed in and is taken up by the machine. Choices of sentence would become restricted to the 'facts' of the case at hand, thereby eliminating human error.

Such a method would answer many of the problems identified earlier in this article – for example Thomas's (1993) concern that legislative statutes 'are scattered', producing the unenviable task for some lowly legal clerk of sifting through the 'quantity' and 'complexities' of legislation, sometimes from as far back as 1948. The computer is capable of utilising all statutes – both quantity and complexity – with machine-like logic. It can be argued that even through the UK and the US attack the same enemy from different poles, both systems might benefit from a more systematised (computerised) policy.

Some thoughts on the negative aspects of computerised sentencing

Probably the most off-putting aspects of computerised sentencing relate to the lack of human involvement. Somehow reliance upon a machine to affect people's lives in so drastic a way (to take away their time) smacks of an 'Orwellian' threat. But in other areas of human life the machine is allowed to do just that – we need only think of the science of medicine to realise this. Therefore, for the writer, this argument holds little weight.

Secondly, judges will fight such a move because the judiciary invariably sees change, of any sort, as a threat to its autonomy. This problem is particularly relevant in the UK where Faulkner (1993), Thomas (1993) Ashworth (1993) and others, indicate that any encroachment on the sentencing discretion of judges is seen as an attack on their professional and specialist independence. The writer would argue that these worries can be allayed and taken up by a computerised model and should not be seen by sentencers as a threat to their skilled training (see the writer's earlier comments above). A judge's experience of cases and case law will form the backbone of the initial computerised programme. Not only this, judges will continuously be required to update and modify the sentencing programme in line with their ongoing re-evaluations based upon the cases which flow through their courts, the type of crimes which are committed within society, public/political pressures, etc.

A few final thoughts

Speaking only of intermediate sanction, Donald Cochran (in Byrne, Lurigio and Petesilia 1992) argues that how to 'develop effective sanctioning policies and implement real change is one of the most serious questions facing criminal justice ... [today]' (1992:307). According to the author,

'[if]... we ever expect to work our way out of the current criminal justice morass ... policymakers and practitioners must ... let go of their pet theories about offenders ... sentencing practice and other issues. Policies and practices are going to have to accommodate paradigms that may be far removed from the way we are doing business today. The present problems associated with moving policy to actual practice are overwhelming (1992:307).

The same might be said of sentencing reform. The sentencing of offenders is a costly business which involves the training of sentencers and other court personnel in ever-increasing numbers. As crimes within society grow, so does the 'machinery' needed to process those numbers. Anything which aids the smooth running of the system, reduces costs and offers a faster mechanism to process more numbers, has to be considered a viable option. For these reason computerisation in the field of sentencing will at some time or another have to become a reality. Anything short of a dehumanised (machine logic) system will become more and more vulnerable in the sentencing sphere as criminal numbers continue to grow. With this in mind Cochran (in Byrne, Lurigio and Petesilia 1992) notes that 'criminal justice policies are being built on a foundation of quicksand' (1992:310). He indicates that the need to adapt policies in the criminal justice system as fast as the next crisis occurs can be undertaken only from a foundation which is secure. For Cochran (1993) this means 'a dynamic process [which balances] policy expectations and organisational capacity ...' (1992:314) through the utilisation of technology. He says that the 'strategic use of decision support systems will change the whole process of individual and organisational accountability and responsibility' (1992:315). Surely such a strategy has to emanate from a greater reliance upon machine logic than on human experience?

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Notes

1 The ideas expressed in the original article (and again variously here) are taken from papers presented at the Colston International Sentencing Symposium held at Bristol University in the United Kingdom during April 1993. Readers who may wish to see a particular article referred to within this work, may contact the writer at the University of South Africa by telephone (012) 429-6269.

2 Dr Thomas has, at this stage, made the request that his conference paper not be quoted. Because of this request, Thomas is merely cited.

3 Andrew Ashworth’s 1993 paper is in draft form only and is therefore cited, not quoted.

Bibliography


