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Legal Cyberspace

Michael Fanning

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Abstract: The paper introduces 'Legal Cyberspace' which can be regarded as a tool for exploring other legal worlds. In practical terms legal cyberspace is a computer-generated interactive graphics environment, i.e. a system of databases and knowledge-base applications rather than a specific application. Developed from difficulties gaining access to foreign legal material for a research project into anti-terrorist law in the United Kingdom, France and Germany, the paper illustrates how an analysis of the problems encountered helped mould the system1s architecture1 which in turn influenced the system interface.

Introduction

The aim of this paper is to introduce the concept of legal cyberspace and thereby provide background for the workshop 'Navigating Legal Cyberspace'.

What is 'Legal Cyberspace'?

The essence of legal cyberspace is best expressed by the ageless maxim that a picture paints a thousand words.

Consider the following example. It is said that English criminal trial procedure is adversarial whereas its French equivalent is inquisitorial (Zander, 1989: 193-8). In order to demonstrate to students the differences between the two legal systems, one could quote and discuss relevant passages from relevant textbooks.

Alternatively, one could begin the seminar by having students compare passages from John Mortimer's Rumpole books (e.g. Mortimer, 1983) with, for example, the second part of Albert Camus' *The Outsider* (1946) which is almost entirely set in a court room. Better still would be to use a film or video of the respective works or the situations they describe.

The pictorial representation of court procedures captures the drama and solemnity of the proceedings, aspects difficult to grasp and appreciate using an entirely text-based method of teaching. Also, and arguably more importantly, a pictorial representation is a better means of conveying the relationships between the actors, i.e. the judge or judges, the jury, counsel for prosecution and defence, the defendant, observers etc. and the environment within which they interact. In other words, the students are able to 'parallel process' the information presented to them.

The origin of 'Cyberspace'

The term 'cyberspace' was first coined in 1984 by the science fiction writer William Gibson in his novel *Neuromancer.* It was described as 'a consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts... A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the non-space of the mind, clusters and constellations of data. Like city lights, receding...'(Gibson, 1984: 67).

The term has now found wide use in Virtual Reality research (Rheingold, 1991: 104-28, 174-93, 378-91).

Legal Cyberspace

Legal cyberspace is the term given to describe a computer-generated interactive graphical environment with which and within which we can explore and gain insights into foreign legal systems. The ideas behind legal cyberspace rely on the notion of 'a system' within a legal system, that the latter comprises a complex constellation of traceable relationships. Computer applications that realise legal cyberspace are therefore tools that enhance traditionally conceptual models of the law and legal systems with cognitive models.

In pictorial terms, legal cyberspace may be regarded as being to the law what litmus paper is to chemistry. Consider the following simple example. Mixing two liquids together may not produce any obvious signs of change. Yet, at a molecular level, the change in the chemicals' constituent parts has been radical. Litmus paper, used to measure changes in acidity and alkalinity, is a tool to enable chemists to perceive the otherwise invisible changes.

Likewise the purpose of legal cyberspace is to bring the law and legal systems into the full range of our perception. To enable us not only to trace paths from one legal system to another, but to be able to recognise patterns in the development and use of legal devices.

The purpose of this paper therefore, is to outline the intellectual, technological and practical issues of building a system to enable a user to navigate through and explore legal cyberspace. To this end the paper will look at the circumstances that prompted the development of the system, the systems architecture and interface, and will conclude with observations on further development.

The Origins Of The System

Behind every good system there should be a good problem. A good problem, after all gives system developers a strategic continuity in the face of rapid technological change. Although the Personal Computer has now been with us for over 10 years, the last 5 years have been so turbulent that it would be fitting to describe those years as a 'revolution'. Not only has speed and memory increased manifold but PC's have come down in price and therefore increased in numbers, such that a terminal free office looks almost Dickensian!

Similarly, there are now quite a number of tools available at reasonable cost to develop a multitude of applications such as databases, expert systems and hypertext systems.

With system development and enabling technology it is difficult to know which is the horse and which is the cart. To the system developer however there is always a danger that a system under construction is solely determined by the technology that brings it into being. A good problem therefore is not only a source of orientation but also helps to maintain the global perspective.

The problem: Terrorism in Europe

The problem that led to the development of legal cyberspace arose out of a research project the aim

of which is to compare the anti-terrorist law of the United Kingdom, France and Germany and to identify any similarities that could be exploited as the basis of a European legislative initiative against terrorism (Fanning, forthcoming).

The basic approach involved firstly painting a picture of national experience. The national experience was then compared and likely similarities distilled from the pool of experience. Whilst sound in principle, the basic approach met with difficulties and numerous barriers when put into practice. Obvious barriers were presented by language. In order to work with French or German legal materials one must be able to read French and German. Legal materials were also difficult to get hold of. Few law libraries have systematic and comprehensive collections of foreign legal materials. Tenacious searching was not only necessary but also often rewarded. Yet, sometimes the reward was double-edged. An English translation of the German Criminal Code was a promising find; but being a 1965 translation, it had a limited usefulness!

Yet, more than language or the availability of legal materials, the biggest single barrier to moving around in a foreign legal system stems from a lack of legal knowledge about that system. To compound the problem even further the lawyer's knowledge of his own system may be more of a hindrance than a help. In the absence of knowing how the other side do things we tend to assume they think as we do (Fanning, 1989). Indeed superficial comparisons may justify the assumption as the following example will illustrate.

The 'accomplice evidence rule' example

Generally terrorist organisations are secretive. The police in France and Germany and the police and army in the United Kingdom have tried to insert their own operatives in terrorist organisations to collect information. A highly dangerous undertaking, the results have been mixed.

An alternative approach was to tempt terrorists out of their respective organisations by offering them a reduction in sentence in return for information. In English law this possibility is provided by the accomplice evidence rule, the use of which in Northern Ireland gave rise to the 'supergrass' trials. The German government observed the effect with which such a legal device was used against the mafia in the early 1980s and passed legislation to institute the *Kronzeugeregelung* or Crown Witness Rule. Similar legislation was passed in France. On the surface all three legal systems made use of a similar device.

Yet, in Germany and the United Kingdom the accomplice evidence rule caused their respective jurisdictions problems for different reasons. In English law the accomplice evidence rule is a legal device some 300 years old. Whenever it is employed it is normal practice for the judge to warn the jury about the need for corroboration. In the special circumstances of juryless courts used in Northern Ireland to hear terrorist offences, difficulties arose where the judge technically had to warn himself. In Germany on the other hand there was only a very weak precedent for such a device. Legislation was needed to reconcile the accomplice evidence rule with the principle of compulsory prosecution which puts the state prosecutor under a legal obligation to prosecute serious crimes.

Thus, while there is a superficial similarity, each jurisdiction approached the implementation of a similar legal device from different routes. This suggests that the legal device of the accomplice evidence rule was set in a different constellation of relationships in each case. Where legal systems mutually influence each other, problems will arise when a legal device is transplanted with scant regard for the set of relationships that surround it. Using medical terminology it is the equivalent of an organ transplantation without tissue matching. As with the medical analogy, lack of tissue matching increases the likelihood of rejection. And this is exactly what happened with the first draft of the German 'Crown Witness Rule' in the autumn of 1986.

Tracing relationships within and between legal systems is not an impossible task. Yet, it tends to

have the practical consequence that the researcher loses sight of the wood for the trees. The larger picture is easily lost in a sea of detail. What is required is systematic and fast access to comprehensive sources of foreign legal material. A tool providing such access must also circumvent the braking effects of a lack of system-specific legal knowledge. With such a tool we stand a better chance of finding exploitable similarity within such deep diversity.

Old perspectives rediscovered

Integral to legal cyberspace is the view of law as a system, made up, for example, of legal systems. This is arguably not a new perspective but one that needs to be rediscovered. Although we talk of legal systems, the law, at least from the perspective of comparative legal research has more commonly been viewed as a series of compartments, restrained by language and technical legal knowledge. Martin Weston, focuses on the problem from a legal translators point of view in his highly recommended book *An English Reader's Guide To The French Legal System.* In the concluding chapter he quotes (1991: 143) as relevant today a passage from an article written by H.C. Gutteridge in 1938:

'The isolation of legal thought in national watertight compartments has always seemed to me to be one of the factors which is most prolific in producing that frame of mind which leads to a spirit of national egoism. We have much to learn

from one another in legal as well as other departments of human activities, and it is, in a sense, a reproach to the lawyers of all nations that they have been unable, up to the present, to arrive at the free interchange' of knowledge and ideas which has been attained in other areas of learning.'

Curiously, an example of how information technology can play a role in unifying the activities of diverse legal structures is provided by the German experience fighting terrorism in the 1970s and 1980s. More curious still, the architect of the computer aided means of detection took to heart, probably unwittingly, Gutteridge's recommendation that we learn from other disciplines.

Information technology against terrorism

The need for alternatives to traditional methods of detecting crime arose from a variety of concerns. Police law in Germany is a Federal State responsibility. Certain types of criminal activity, not least of which was terrorism, were difficult to combat through a web of jurisdictions and competences. The solution lay in coordinated intelligence gathering and information dissemination. To achieve this, legislation was passed to grant the Federal Police Office (Bundeskriminalamt, abb. BKA) the competence to collect and disseminate information on serious crime. In addition the BKA was given funds to acquire the appropriate computing technology.

The move towards the systematic collection and dissemination of data was also driven by the nature of terrorist offences. After a terrorist attack, the police generally knew which organisation was responsible, mostly on the basis of information provided by the terrorists themselves. But the identity of the individuals concerned always remained a problem. With deadly professionalism, the terrorists rarely left clues at the scene of the crime. Thus the police were unable to begin to draw up a list of suspects by working back from the person and circumstances of the victim, a la Agatha Christie. Instead, the new approach involved the systematic collection and analysis of data.

The new techniques were not without problems. They altered traditional views of the rights of the suspect under criminal law and also met with resistance from data protectionists.

Insights from other disciplines

The principle architect of the new methods was Dr. Horst Herold. A lawyer from Nuremburg, he was

strongly influenced by cybernetics, the theory of dynamic self-adjusting and selforganising systems, which he regarded as belonging to one of the most important scientific achievements of this century (Herold, 1986).

Cybernetics is the term coined by U.S. mathematician Norbert Wiener, to describe the interdisciplinary approach to the study of control and communications in animals, humans and machines. Many of those areas covered by cybernetics have been absorbed into the framework of other subjects, such as artificial intelligence.

System Architecture

Having established that the need is for a tool to provide systematic and comprehensive access to other legal systems and that information technology can be used to accommodate the deep and cultivated diversity within legal systems, the question then to be answered is what kind of tool can be built to enable us to usefully explore other legal worlds?

A constellation of legal systems

Traditionally, acquiring materials on foreign law meant visiting a foreign law library or ordering the said materials from a distant location.

However, the advent of law databases now means that a researcher, (referred to from now on as the user) can access regularly up-dated, legal materials in a systematic way 24 hours a day from a single site, be it their office or living room. And that 24 hours a day. Taking the research project on anti-terrorist law as an example the jurisdictioris to be examined may be illustrated by figure 1.

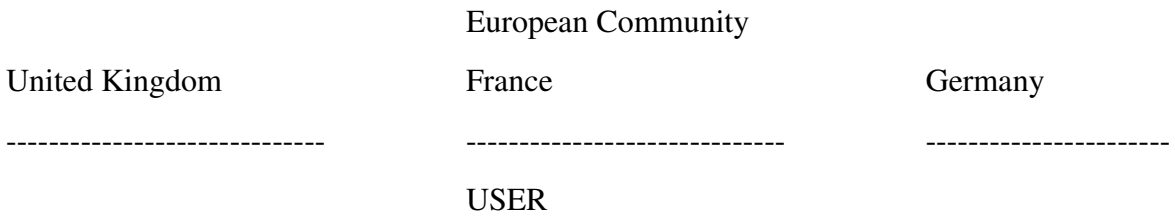

Figure 1: A constellation of legal Systems

The diagram is of course, overwhelmingly simple. We can, however, add more and more detail as required. We could plot, for instance, the formal links between the legal Systems, that is, treaties and agreements that bind states to each other. Some of these links are multilateral. The United Kingdom, France and Germany are all members of the European Community, for example. Some links, on the other hand may only involve bilateral agreements. France and Germany are signatories to the Schengen Agreement whereas the United Kingdom is not.

Alternatively, we could also plot informal links. These are similar principles or legal devices which although have no formal standing between states, nevertheless are actively present in the legal systems. I would include here, as an example, the use by the United Kingdom, France and Germany of the accomplice evidence rule. Another might be the principle of proportionality which is actively applied in France, Germany and European Community law, which hovers close to acceptance but has not yet been accepted in English law (R. v. Secretary of State for the Home Dept, Ex parte Brind, 1990: 2 WLR 787).

So while the diagram represents legal systems as single entities it is more realistic to describe them as a constellation of intertwined, interlinked relationships. How can we begin to even chart the relationships let alone see them?

A constellation of legal systems' databases

For each of these particular jurisdictions there are numerous legal databases, both online and offline, i.e. CD-ROM or disk. If we were to take only one database system to represent the jurisdiction we could for example represent European Community law with the CELEX databases, the United Kingdom with LEXIS, France with JURIDIAL and Germany with JURIS. Thus the constellation of legal systems could be represented:

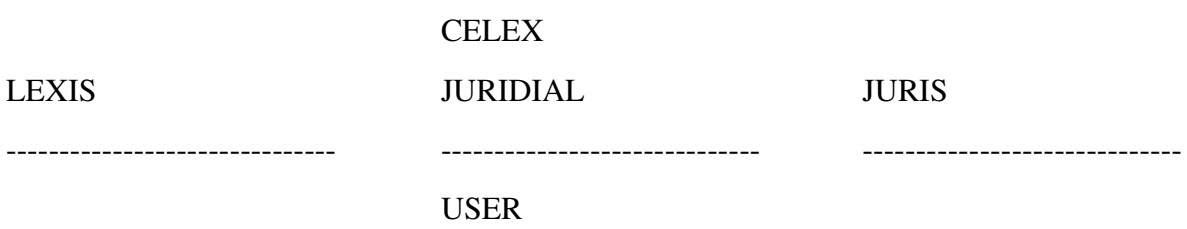

Figure 2: A constellation of legal systems represented by law databases

The databases however will only supply us with what might be termed 'raw law', namely legislation and case law. To plot the relationships between the systems we need to elicit the help of knowledge-based systems (KBS). Originally the talk was of using KBSs as so-called 'intelligent front-ends' to databases. However, there is no reason why they should not serve an interstitial function.

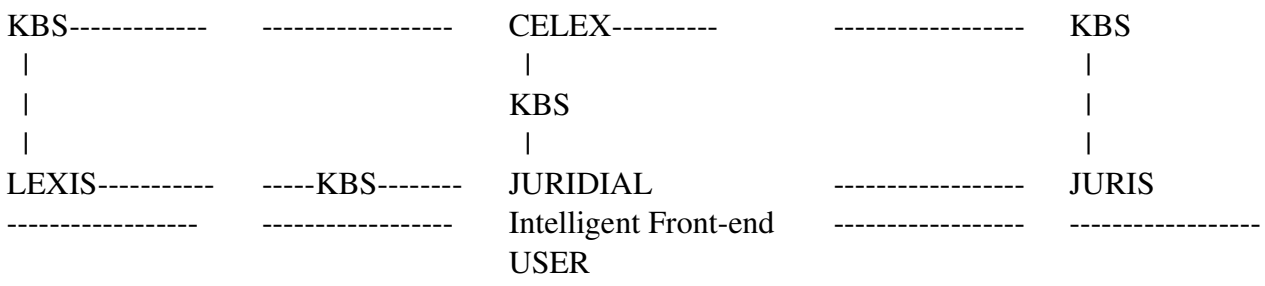

Figure 3: Knowledge-based systems (KBS) facilitate access to and use of database systems

Figure 3 raises a few points that need to be looked at in more detail.

The irrelevance of physical distance

As portrayed in the current discussion, legal cyberspace is about facilitating movement to and through foreign legal systems by removing barriers such as a language barrier or lack of legal knowledge. Generally, these will all be dealt with by knowledge-based systems integrated within and around the databases. Yet, the fact of the presence of legal information through databases is itself one of the most important singular contributions to the development of legal cyberspace.

Using the databases referred to in Figure 3 effectively means establishing computer-to-computer links, via a packet switching system, with computers in Luxemburg (CELEX); Dayton, Ohio in the USA (LEXIS); Paris, France (JURIDIAL); Saarbruecken, Germany (JURIS). If we were to telephone these locations, different time zones, noisy telephone lines and eventually the telephone bill would remind you that communication has been carried out over a substantial distance. None of this applies with digital, i.e. Computer-to-computer transmission. This may seem a trivial point to emphasise, yet let us recall that many basic legal concepts, not least of which is the notion of jurisdiction, are centred around physical distance.

From a user's point of view, therefore, it is not really relevant where the computer holding the database is actually located. This may well apply to the so-called offline databases such as CD-

ROMs if they are held on a network. In such cases users will see the physical disc, but logon to the system and call up the required database in much the same way as they would the online databases. Here we find an echo to points made earlier about avoiding dependence on technology. At least 3 law database producers (Juris GmbH, Context Ltd. and Kluwer) have developed the so-called seamless interface which enables users to move from a CD-ROM application to an online database and back within the same interface. Hence old classifications as online and offline etc. are becoming increasingly opaque to the user. This will have important consequences for system interface design.

Invisible applications

Secondly, knowledge-based systems have been referred to as a generic group. I have not specified what a knowledge-based system might be. There are both theoretical and practical reasons for this. As to the latter, the following points are made off the basis of over 3 years experience developing, promoting and selling domestic and foreign, law databases. Generally speaking1, users buy law databases or subscribe to a legal information service because the database contains necessary and relevant information. Also, the requirement for the information must be sufficiently strong to justify the expense. Whilst a product's features may influence a decision, experience has shown that it rarely forms the basis of a decision to purchase. Therefore, phrases such as artificial intelligence, expert systems, hypertext etc. excite the specialists. However for commercial products, such labels can be, to quote one American writer, 'the kiss of death'. Indeed, our own experience marketing of CD-ROM products with hypertext features vindicates this. The fact that these products have hypertext features does not act as an extra incentive to buy the product. If at all, there is a distinct danger that such labels act as a disincentive. We prefer to appeal to that which is familiar. This point will be further discussed in relation to interface design. The number of shells and authoring tools available to users is numerous. The division between them has in some cases become blurred. A hypertext authoring tool may lend itself to expert system development. Or an expert system may include a neural net front end. Again these aspects of system development are of little interest to most users. As mentioned before, we must take care not to get bogged down by the vagaries of technology.

There are two theoretical reasons for avoiding detailed definition of knowledge-based systems. Firstly, systems should have a childhood. Expert system development which has tended to dominate the discussion of knowledge-based system in law, starts with a specific knowledge domain, namely that of the expert. Legal cyberspace architecture also uses expert systems but sees them mainly as part of an interlinked network of knowledge. The perspective used in the legal cyberspace architecture has been well described by (Smith 1989) who remarked that we should treat computers like children. He used the example of HAL, the meglomaniac computer in Stanley Kubrick's film *2001.* The space station's sole human survivor eventually switches off HAL who subsequently regresses to a stage where the once omniscient computer is only able to recite verses of *Daisy, Daisy.* Posing the question 'why would a computer assigned the task of running a space station ever need to know a silly, simple song' and 'why, for that matter, do children need to know nursery rhymes ?', Smith concludes,

'The answer is that knowledge has to be extensively interlinked for us to function as well as we do, and that the human brain is built the way it is in order to cope with the vast amount of knowledge which we accumulate. Each of the hundred billion neurons in the brain is connected to up to a thousand others. This means that items of knowledge are interdependent and that newly acquired knowledge is integrated with existing knowledge so that learning becomes a process of learning that which you almost know. This, in turn, means that the knowledge an adult possesses is to an extent dependent upon and integrated with the knowledge acquired during childhood.'

The performance of an adult or child is based upon that of the individual as a whole rather than on the items of knowledge that the individual possesses. Similarly the usefulness of legal cyberspace should be judged upon the performance of the system as a whole and not on its individual knowledge-bases. Also, an integrated knowledge-bases systems approach increases the plasticity of

the system. It is important that a knowledge base knows the limits of its own knowledge, that it may refer to alternatives. To quote Samuel Johnson, 'knowledge is of two kinds, we know a subject ourselves or we know where we can find information upon it'.

A second problem is the Frankenstein Syndrome, which is a serious conceptual constraint on building computer systems. This describes the general tendency to build computer applications in our own image. I have already fallen foul of the Frankenstein syndrome by referring to a system's childhood.

A good example of what is meant is provided by expert systems. These are essentially computer applications which mimic human performance, namely that of an expert. True, they may be used under conditions which have hostile or difficult for their human equivalent. Or alternatively they may enable a specific expertise to be distributed to a wider audience. Nevertheless, they always exist in the shadow of the human expert.

The general point here is that some information processing tasks, for example information storage and retrieval, are better suited to machines than they are to humans. Whereas other tasks, in particular pattern recognition, are far more efficiently carried out by humans. For system developers the question is one of approach. Should the system reproduce human skills or enhance them? If the latter is the case, system developers need to be able to appreciate knowledge processing skills that are non-human.

Legal cyberspace seeks to enhance human performance by combining and exploiting both human and machine information processing abilities. The aim after all is to remove 'low-level barriers to high-level thinking' (Rheingold, 1991: 83). Some have described the approach as intellectual amplification' (Brooks, 1977).

Legal Cyberspace - System Interface

As the problem that prompted the building of legal cyberspace influenced the system's architecture, similarly system architecture exerts an influence upon the system interface. There are two influences we shall look at in particular.

The first point is indeed expressed by the very phrase 'system interface'. The user connects with (talks to) a system and not an individual database or knowledge-based application. In other words the 'nuts and bolts' of the system, i.e. databases and knowledge-bases remain largely transparent to the user. The seamless interface may be regarded as a step in this direction, as up until now, certainly in terms of legal databases, whether the database was online or on CD-ROM almost exclusively determined the appearance of the user interface.

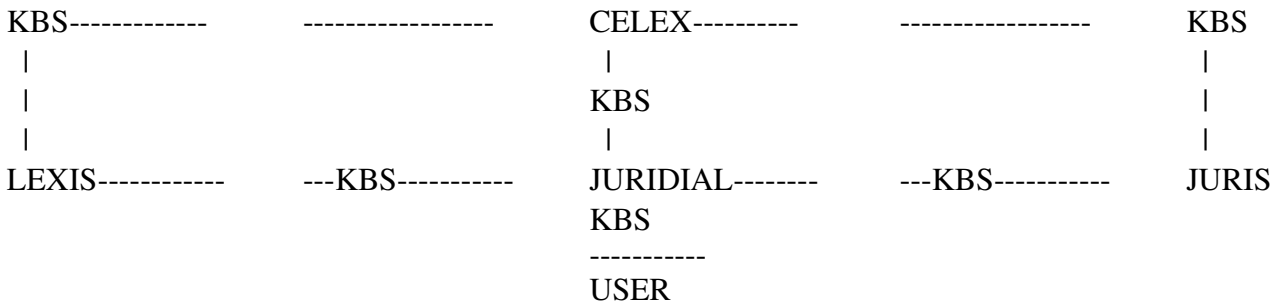

Figure 4: Legal cyberspace

In considering the second point it is appropriate to refer back to Figures 1 to 3. In each case the user is represented as external to the system. Yet, as was discussed above, the system architecture seeks

to exploit a marriage of human and machine information processing abilities. Thus it would be more fruitful to talk about the human user as part of the system. We are all sophisticated knowledge-based systems. It is fitting then to return to Figure 3 and remove the dotted line that separates the user from the constellation of databases and knowledge bases. Only then are we moving towards true legal cyberspace, (Figure 4).

User integration

By regarding the user as part of the system rather than external to it we open up the range of perspectives from which to address user needs. The integration of the user into legal cyberspace is also appropriate in legal terms. Although the law may well appear invisible and distant, we actually conduct our daily lives within a complex mesh of legal rules and relationships. An example of the need for flexibility in the design of user interfaces is provided by the previous discussion on the accomplice evidence rule. Let us describe the rule as a common destination within legal cyberspace. Bearing in mind the different ways the rule was implemented and the different problems experienced by each jurisdiction, it will be clear that lawyers from the different systems will approach legal cyberspace from different directions. For instance, the German lawyer regards the rule as an alien legal device for which legislation is required. The English lawyer on the other hand sees the device as rooted in case law. Thus, not only a person's language but also the quality and degree of their legal background will determine how they interface with legal cyberspace.

Seen in another way most current database and knowledge-based user interfaces make assumptions about the user: that, for example, the user speaks French, is familiar with legal terms, has the patience to learn a strange retrieval language and has read the application's handbook. Where, as is often the case the assumption is not justified, the user is confronted with a barrier to using the system. So, what we are looking for in a user interface in terms of legal cyberspace is one that is both dynamic and able to adjust itself to the user's person. Primitive examples of such interfaces are those applications that offer users an expert mode, e.g. early versions of CONTEXT and JURIS CD-ROMs, or databases that offer language versions as well as an expert, intermediate or beginner mode, e.g. some of the databases on EUROBASES.

Pattern recognition

The human user, as a knowledge-based system is very skilled in pattern recognition. Regardless of whether an interface is text-based, graphics-based or a mixture of both, appealing to that which is familiar removes barriers. Smith (1989) refers to learning as 'learning that which you almost know'.

Use of graphics

The word 'graphics' is best used with caution. Unfortunately, a 'graphical interface' can mean all sorts of things and has only consistency when used to mean not exclusively text-based. The distinction between text-based and graphics-based applications is a division determined by current technology.

This is not to say that legal materials should now be expressed entirely as pictures. That venerable cases such as Donoghue v Stevenson (1932, All ER Rep 1) be depicted as multimedia extravaganzas, featuring graphic details of decomposing snails and poorly shop assistants! Rather, that in the presentation and exploration of legal material we supplement text with those possibilities offered by pictorial representation. The pictures may be literary, like those cited in the introduction. Or they may involve, video and voice, in other words be fully fledged, multimedia applications. Alternatively they may be diagrams.

After all lawyers use words as tools and graphics provide a tool for more fruitful communication of complex legal relationships. Consider for example being lost in a city. If somebody tells you which street you are in are you really likely to be any the wiser? But if the same person produced a map,

regardless of whether or not you spoke the same language, you could more usefully determine where you are.

Conclusion

Legal cyberspace, as a tool, is still in its infancy. Yet, further development should be considered in two directions.

The first direction involves refining the system's details. It will be necessary to determine the exact nature of the knowledge-base systems, for instance their technical manifestation, how they can be linked to each other and to databases and so on. In turn, the user interface will have to be refined and adapted to provide for speedy exploration through legal cyberspace.

In contrast, a second direction involves moving away from detail instead of into it. In other words, to consider the new, or old but alternative perspectives such a tool may well provide.

To borrow from chemistry one last time, litmus paper and related, yet more sophisticated techniques, opened up new experimentation possibilities which in turn generated new insights.

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