6th BILETA Conference 1991

Editor: Tim Green

The Paper Case

David R. Clark Ph.D

Director

University of London Audio-Visual Centre

Keywords: Computer assisted learning - Interactive Video Disk - Civil Procedure

Abstract: This paper describes the processes that led up to the production of a computer-controlled videodisc simulation of an aspect of English civil procedure designed to be used in academic education and professional training.

The simulation is a self-contained programme in which the player takes the part of a solicitor who aquires a client in need of advice in a civil action. The evolution of the case depends on the choices that the player makes as more information is discovered. As the action evolves, the player accumulates a file of information which can be consulted at any time.

The videdisc consists of some 200 short sections showing the client and other participants, and the action can take place in the Law Courts, the chambers of the barrister and other locations in and about the Court. All the locations are real and, wherever possible, parts are taken by legal practitioners.

Introduction

Perhaps the most important process in learning is making mistakes. It is only by having the freedom to make mistakes, to see their consequences, and to use the information gained in this way to avoid making the same or similar mistakes again, that a student can change the way he or she thinks. The new medium of interactive videodisc provides just this kind of environment; moreover, unlike earlier computer-based inslructional systems, the quality and quantity of information that can be provided is commensurate with the skills required for professional training.

Why Law?

At first sight a videodisc for the training of solicitors might seem an eccentric choice for a pilot project to study videodisc in higher education at the University of London. Nevertheless, there are two good reasons for this choice of programme as one of the three major videodisc initiatives that we have undertaken in collaboration with the Department of Trade and Industry and Thorn-EMI Limited. The first one is historical. The University of London provides a wide range of External Degrees. Students registered for these degrees have no residence requirement and students from all over the world sit University of London examinations in their home countries. One of the most popular of all the External Degrees is the University of London Law Degree; it seemed, therefore, to

be a good idea to test the practicability of supporting some of the more difficult aspects of that course by means of interactive videodisc, since, in principle, this delivery system is ideal for distance education. The second reason is more subjective; it seems to me that if interactive videodisc can be made adequately to simulate such a personal and complex process as the training of a solicitor in civil litigation, then interactive videodisc can do everything that may be asked of it in education.

From Tape to Disc

"*The Paper Case*", which is the title of our interactive videodisc, grew out of a collaboration with Dr Martin Dockray, then of the Faculty of Laws, Kings College, University of London. Some years ago he felt that, even for full-time resident students at the University, some of the concepts involved in the course on the English Legal System were difficult to convey. In particular, the difficulty in classroom presentation of the material was that the facts themselves did not adequately convey the everyday practical aspects of the law that are just as important as the legal niceties themselves. He commissioned the Audio-Visual Centre, therefore, to produce a videotape, "*Swift v. Greenshire County Council*", which involved a case history of a teacher, who having had an accident on school premises, decides to sue for damages. This videotape ran for forty minutes and was supported with a pack containing all the relevant documents and has been used in both academic and professional legal education in England. Throughout its planning, Dr Dockray remarked that the script prevented him from giving a true picture of the scope of the legal universe being explored. He and I (as the producer) had arguments over the need for a clear story line and the competing claims of legal complexity. These were resolved to our mutual satisfaction within the constraints of a film, but when interactive videodisc became a reality, I went back to Dr Dockray, able now to offer him what seemed to me the perfect vehicle to manage the complexities of his legal universe. Dr Dockray grasped immediately the potential of this system and took the injunction to pay no attention to the practical limitations of the device and to create a world of possibilities as required by the subject in hand literally; tailoring those ideal requirements to the delivery device would come later. Planning an interactive videodisc is still largely uncharted territory and, at the level of complexity into which Dr Dockray immediately launched, we were, at that time, without any kind of planning tool. Looking back, our first steps were more ambitious than they would have been if we could have seen into the future that we were creating for ourselves.

Setting the Ground Rules

Several guiding principles were established at the beginning. The first of these was that we should seek to maximise the number of possible erroneous choices, since this would provide the richest simulation. It was at this stage that we discovered the first videodisc theorem which states that a videotape is the least interesting path through an interactive videodisc on the same subject. The second principle was that there should be no clear outcome to the case and that the result should depend on the strategies taken by the player; it was at this point that the game element of the project began to assume some importance. The third principle was that all aspects of a working solicitor's activities should be represented; this meant in particular that the matter of negotiating for a fee before accepting the case, the ability to negotiate a settlement at all stages, and the pressures of time and money should be represented. One element of this last set of constraints had to be relaxed: in real life there is only one trajectory through a case - the one that you take. The essence of this videodisc programme was that students should make choices, discover them to be erroneous in some manner, and then be offered the chance to recover from that mistake. It is in this pattern of imagination, guessing the next step, finding it wrong, understanding its wrongness in the context of what has gone before, and then, when confronted with the same choice again, making a right(er) decision that the heart of the learning process lies.
These principles constrained the practical implementation of the game. In particular, the need to avoid undue filmic complexity of a kind that would prohibit the jumps that making choices would require, forced us to present all visual information from the point of view of the student. This technique of the personified camera means that one of the standard devices of conventional filming,

the shot and its reverse, is not available. Such a restriction brings with it the advantage that the player can be of any nationality and either sex. It turned out that this technique has the great advantage of giving the player a heightened sense of involvement in the action. [In conventional film-making, where the camera is the third party in the scene, the protagonist, the solicitor for the defence in our case, would have to be portrayed.]

It is essential here to emphasise the most important difference between the presentation of an idea on a linear medium [such as film or videotape] and on a videodisc: whereas with the linear media participation is essentially and necessarily passive and receptive, with the interactive media participation is not merely useful, it is essential; nothing happens unless the student *does* something. As with all legal matters, the documents in the case are pre-eminent. We are not yet clear whether, in the use of this system, hard copy of just those materials to which the student has gained access are required. For the moment, documents generated or acquired in the progress of the game are available to the student for inspection as an on-line help facility; this debate will be resolved in practice.

Planning the Interaction

Dr Dockray's first steps in setting out the logical flow of the legal action which he had selected - defending a claim against his client for an alleged breach of contract - were taken using a memo board and "post-it" notes. Over a period of three months, repeated requests for yet more memo boards and yet more packets of "post-it" notes were received. Finally, he came with a package held with difficulty in both arms that, when laid out on the floor, extended for some twenty feet in all directions. Apologetically he said that he could go no further and that this represented only the first one-third of his conception of the case. The key problem was the novelty of what we were trying to do. Our inexperience in planning such a heavily branched and necessarily re-entrant scheme meant that we were continually wishing, as a result of conclusions reached at the current stage, to go back and alter, modify or extend earlier parts of the system. It was clear that some more versatile flow-charting system would have to be devised. Dr Dockray set out what he called a first pass at the bare bones of the logic in book form and our task at the Audio-Visual Centre was to find a suitable formalism in which to construct a flow diagram which embodied the many and various intertwined possibilities that the case now involved. We found such a system in the Macintosh computer and one of its standard programmes, MacDraw. This was sufficiently versatile to produce the two hundred square feet of flow chart that represented our final version of the problem. There were many iterative steps in the production of the final flow-chart and its creation and refinement occupied about one person-year.

With this backbone we were able to work up the two other components of the problem, the script and the disc layout. One of the experimental aspects of this project was the degree to which very short video clips could be melded with frames of computer-generated graphical information to provide a satisfactory narrative. As there are only about thirty-seven minutes of run-time video on a laservision videodisc, if there are to be a large number of visual sequences they must all be very short. The division of information between graphical frames and video clips was, therefore, of considerable importance. Following one of the guiding principles that the simulation should be as real as possible, we maximised the number of occasions on which visits to the Courts and to other locations such as barristers' chambers would occur. Another Macintosh programme, MacProject, was very useful as a totaliser for elapsed time for the moving sequences. The script was written and re-written in order to fit in some two hundred video episodes. This process of iterative refinement included the flow chart so that, by the time it was finished, we had produced what we hoped was a self-consistent scheme in which the logical flow was correct and its textual and verbal embodiment apposite.

Practical Implementation

At this point in the project, two strands separated out. The logical flow diagram together with its associated rules was handed over to a programmer expert in the computer language chosen for the project. Meanwhile, the script was broken down and costed and scheduled for filming in the normal way. Although to speak of a normal way in the videodisc connection is inaccurate. Filming for

videodisc is quite unlike filming for videotape or other linear media because videodisc dispenses almost entirely with the conventional devices of narrative structure. In a film the juxtaposition of two shots is as important as the shots themselves and their photography must reflect the requirements of this juxtaposition. In a videodisc of the kind we were making there were no filmic cuts. Transitions always took place from film to graphic and vice versa. Furthermore, there was a different kind of continuity constraint from that present in conventional filming. The end of every sequence had to be thought of in logical terms as the beginning of several others, each of them being a possible continuation. This problem, horrific to contemplate at first, turns out not to be so serious in practice. The reason for this is that, whereas in a film the passive viewer must be presented with a coherent temporal universe in order not to be distracted, in a videodisc, since changes occur at the behest of the user, so long as they do not seriously violate expectation, transitions can disobey the strict rules of filmic continuity.

The filming for this project took place over two consecutive weekends and the intervening week. It involved some seven locations, five of which were within the Precincts of the Royal Courts of Justice and, therefore, subject to a comprehensive ban on photography! Suffice it to say that both the earlier videotape and this videodisc received the blessing of the Lord Chancellor and the consequent permission to film. We were forbidden, however, to use the services of a judge on camera; to guarantee the verisimilitude of the script, we had decided to use professional legal practioners rather than actors in all legal roles wherever possible. To heighten the personification of the camera, we used Steadycam and the material was recorded on Betacam. One of the great virtues of videodisc is that it can display a still picture and many aspects of the simulation, and in particular the "scene setterstt which bridged transitions in time and space, were accomplished using appropriate still photographs. In addition to pictures of the Law Courts and barrister's chambers, these still pictures also serve as backgrounds to the text for the large number of letters and documents contained within the system.

The programming language selected for the whole project was Microtext. This language, originally developed at the National Physical Laboratory for computer-based training, has been developed and extended to make good use of interactive videodisc. It is native to the BBC Micro, a cheap, 6502-based microprocessor that is readily available in the UK. One of the aims of the project as a whole was to examine the performance of Microtext running on a small computer in relation to the demands of tertiary educational materials. Although heavily stretched, the programming language has stood up remarkably well to the demands of the flow chart. The entire code, including the text for the documents and the graphical support, occupies about a megabyte disposed on three floppy disc sides; the fourth side is used as the scratch file for the current user interaction.

Getting to Know the Client

The central problem posed by the style and form of the interaction that we chose was that you, the user, have to interact directly with all the participants in the drama. In particular, you have to interact with your client and there had to be a realistic manner in moment of the problems posed by the "I am the camera" view by the need to receive a telephone call - in particular, what are you looking at? User response to our solution to this problem justifies it. The main burden of the action, as portrayed on the video, has to be carried by the man who becomes your client, for this part we secured the services of Joe Melia, an actor of considerable range and experience. He was able to grasp the peculiar demands of acting for videodisc, with its need to repeat the same scene with variations, with great facility.

The Interrogation Loop

His gifts were at their greatest in dealing with what came to be called, in our parlance, the interrogation loop. You, as the player, must elicit information about the events as they occurred in order to form a legal opinion. Just as in real life the law can know nothing of what actually happened, only what people say happened, in this simulation there are no reconstructions of the events which precipitated the action. Some way had to be found, therefore, to allow the player to

elicit what he or she considered to be relevant information. In its finest form this will be a task for an intelligent knowledge-based system. Such a solution was out of the question in the context of the computer power available to us. Microtext supports limited keyword matching facilities and we have devised a scheme in which the videodisc contains some sixty answers to questions both appropriate and inappropriate. These are found by offering the student free form sentence entry, checking for keywords in this entry that match keywords assigned to the questions that will elicit these answers, and then offering the student the question found by this match as a re-phrase of his own. This rather left-handed paraphrasing works surprisingly well if the student accepts the specialist vocabulary of the legal world; nevertheless, it is in this area that the new advances in computer power, such as speech recognition, will yield their greatest results.

Bringing the Strands Together

The videodisc having been pressed, the final task was to marry the disc to the Microtext programme. It is at this stage that "screen design" assumes a great importance. The presentation of the computer graphic and textual material as overlays on frozen frames from the video is an effective technique, but designing for the intervals of black screen that must inevitably occur when transitions between movie sequences take place requires care. Again, the active nature of the involvement of the student plays an important role in the design. There is no doubt, however, that the most formidable problem is programming consistency. The total number of different trajectories through the interaction that we have created is certainly more than 10,000 and only probably less than 100,000. Guaranteeing that all these paths are free from semantic error is a huge task. Syntactically the code is very simple, being little more than a user-friendly version of assembly language. It is the re-entrant nature of the code, with an accumulation of flags set at different stages in the trajectory prior to the jump back to an earlier entry point, that opens up the possibility for error. Unfortunately, it is exactly this re-entrant nature which confers power on the simulation. It is abundanfly clear from this work, which I believe represents the most elaborate videodisc interaction yet attempted, that the next generation of computer languages to be designed for interactive videodisc must take account of this problem. I look to the object-oriented languages such as Smalltalk, as the most promising areas of development.

The Legal Scenario

A hotel proprietor accepts a consignment of paper towels bought initially as fire salvage. On delivery he finds them damaged, refuses to accept them and decides to take legal advice. Whilst he is so engaged, he receives a letter before action intimating further proceedings unless he pays for the goods. He telephones his solicitor and you, the player of the game, elicit sufficient information for you to give him the initial advice he needs. He comes to you again as he has received a writ and needs your advice.
You find out sufficient information to enable you to decide whether or not to act on his behalf and agree terms. The case now proceeds by stages to resolution by negotiation or judgement as determined by your actions as the the solicitor for the defense. In the course of the defense, an R.S.C. Order 14 application is made, a barrister can be consulted, and the game offers as accurately as possible the options open to you as the law requires.
It is open to you to take decisions that are unsound, although the consequences of these decisions do not always emerge until later in the game, often with unfortunate results. It is always possible to re-enter the simulation at the point where the damage was done and re-explore the decisions again.
The simulation contains several kinds of document. There are documents that can be accumulated and inspected throughout the game, such as the writ; documents that are created as part of the process, such as the answers to the questions that you ask your client; documents that are created as part of the legal process, and letters and telexes that pass between you and the opposing solicitors. These latter documents cannot be revised, whereas the essential documents in the case can be accessed at all stages.
Once embarked upon the action, you are free to negotiate a settlement at any time, your offer may or may not be accepted. Furthermore, your client is at times critical of your handling of the case and

you need to be aware of the cost and time so far committed; these details are available for inspection at any point.
The full simulation occupies two videodisc sides: the second side contains the trial that can ensue if particular sets of decisions are taken.

Assessment

It has proved very difficult to make the program robust. There are several reasons for this, the most important being the choice of target machine and programming language. The resources for the reliable development of re-usable code do not exist for Microtext on the BBC micro. At the time the choice was made to use this universe (1984), it seemed reasonable to hope that a development path would parallel our activities and that we would be able to make use of others' developments. These difficulties notwithstanding, we have been able to put the system out to test by Law students at Leeds University. These trials have been most encouraging, in that the students have used the system in groups and the discussion that has been engendered has been, according to their tutor, very valuable. Unfortunately, these trials have had to come to an end as the staff member has taken a job in America. We are keen to pursue further opportunities for development with other groups.
One important feature of the design is that the program can be entered at any one of 14 key points throughout the action. In this way, without going through the whole procedure, particular stages in the action, such as Discovery, can be used as examples. We are exploring ways in which the entry conditions to these points can be set up by the tutor to explore particular circumstances without going through the whole action to that point.

Plans for the future

The trouble with the law is that it changes. In our case, there have been alterations to the law that mean that some of the programming needs to be revised. It seems, however, that the material on the videodisc is still appropriate, as we took some care to make it as resistant as possible to change. It seems from our enquiries that there are two separate avenues to be followed. The first is to make the game available to sixth formers as an introduction to the details of Civil Procedure in a General Studies programme. The second is to re-work the logic on a better platform to deliver the original intention, that is to say, to give law students a 'feel' for what the actual practice of the law is like before they take up articles or other paid employment in the legal system. The machine of choice is the Macintosh computer system, because it allows for the high quality presentation of the large number of documents involved. The original decision to combine the computer and video images on the same screen seems not to be essential in this case and, if it could be incorporated, some form of voice input would be most helpful.

Conclusion

In the nearly seven years that have elapsed since this project was initiated, the developments in interactive videodisc have been far slower than anticipated. This legal simulation remains one of the most complex that has so far been attempted in the educational field. There is some indication that the climate of opinion with regard to the use of computers in the practice of law is developing away from the traditional accountancy aspect to more constructive uses, such as decision support and other knowledge-based systems. In this context, the use of computers for teaching cannot be far behind. The responses we have had to this simulation convince us that this technique is of considerable value in introducing students to the 'real world' aspects of professional practice without doing any damage to the firm's reputation. This project has confirmed our view that such systems are now sufficiently easy to generate that the time taken by the 'knowledge owner' to devise them is well spent, and we look forward to developing other, related, productions.