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Hypertext - New Paradigms in Legal Education

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Abstract: Hypertext and Hypermedia require no assumptions as to the nature of law, nor any rule formalism; they are a "quick and dirty" method of presenting material - legal or otherwise. Until now hypertext has lacked a theoretical foundation. Some might argue that this is one of its greatest virtues, in that building Hypertext requires no grand theory. However, Critical Theory, in particular Derridian/Foucaultian Post-modernism, has clear theoretical applications to Hypertext/Hypermedia. Hypertext has the potential to deconstruct much of the accepted thinking on the nature of academic instruction and learning, not merely in a legal context.

Introduction

Legal education is about law as it is, and to varying extents, how it ought to be. It is no different from any other discipline in that it is, to some extent, about ideas, their communication, development and debate. Any legal thinker should constantly be questioning, extending and refining anothers' ideas. However, the impoverished nature of knowledge transfer considerably inhibits this process. The production of printed material continues apace -the courts and legal publishers produce material every day on matters that concern lawyers. Thus, in order to retain our value as experts (either in practice or in academia), we are constrained, inter alia, by the sheer volume of printed material to become specialists in a sub-discipline. Yet at the same time, academics should be free thinkers and be able to explore connections where none may appear to exist. The existing disciplinary paradigm considerably inhibits that process.

The underlying theme of this paper is that the network/web paradigm is in the process of ascendancy as a method of information and knowledge representation. (Knowledge implies the essence of meaning.) However, its users have not yet begun to consider the social and intellectual consequences of this paradigmatic shift. Kuhn (1970) writes "*a new theory, however special its range of application, is seldom or never just an increment to what is already known. Its assimilation requires the reconstruction of prior fact, an intrinsically revolutionary process that is seldom completed by a single man and never overnight."* What Hypertext represents is a paradigmatic shift in the way we access, perceive and deal with the construction of information. The irony of this is that, although we are prepared to endorse and make full use of the technology, we have yet to investigate the theoretical framework which sustains this new development. This paper seeks to take some steps in righting the imbalance.

This paper will briefly look at the history of knowledge representation, from before the invention of the printing press through to the continuing information technology revolution - a review of the oral, printed and digital traditions of knowledge representation and will look at the ways in which the

structuring of language affects our culture. In doing so, it looks at the convergence and application of Critical Theory with Hypertext technology. In particular, the application of the writings of the philosophers and literary critics, Michel Foucault and Jacques Derrida is examined and we consider the implications of this convergence for legal education.

The Nature of the Shift

It is the thesis of this paper that Hypertext is merely one manifestation of the wider paradigm shift. The new scientific frontier is based on complexity theory whether related to the study of the brain, the economy, or the weather. In the last six or seven years in the field of Artificial Intelligence, we have witnessed the revival of Neural Networks, the so-called "neural wave", a wave of interest in Neural computing promulgated by articles in a variety of mainstream periodicals. It is arguable that the developments in Neural Networks theory represents a further manifestation of the shift from a representation of knowledge as rule-based or symbol manipulation (as in expert systems) to theories based on, or consistent with Connectionist theory i.e. a shift from the sequential and linear to the non sequential and non-linear i.e. to the complex. In Neural Networks the key to the program's function is its connections or its links, as with Hypertext. The knowledge is distributed throughout the network rather than in a single key memory location. After knowledge has been learned, it is "memorised" in the network architecture and the weighting between individual neurons.

Furthermore, through the Internet, (a network of networks,) researchers are discovering that their work can be enhanced by reference to a web or network of material. Interestingly, it appears that a system called 'World Wide Web" (WWW), a system that links the information is becoming a world-wide standard on the Internet. It's interface uses Hypertext. WWW translates all the Internet buzzwords such as "Veronicas," "gopher searches," "FTP" and 'WAIS databases" into one simple intuitive interface. In short, it gives the average computer user comprehensible access to all the facilities of the Internet. However, the physical locations of these facilities may be all around the world. Thus, geographic distance will soon present fewer barriers to research. Immediate access to the work of colleagues to libraries containing thousands of volumes and papers will give academics the ability to incorporate knowledge not only from different disciplines but also from different continents. Twenty years ago all this remained unavailable and unthinkable.

The Historical Context -European Knowledge Transfer in the 15th Century

Prior to the invention of the printing press, text reproduction was a profession for "scribes", their product being produced by hand. This slow and tedious process would inevitably result in some degradation of the original text over time, known as "textual drift." Yet for knowledge to survive from one generation to the next, information had to be conveyed through this fault-ridden system. Thus, the most important function of the reader, prior to the invention of the press was to preserve the often fragile original manuscript. For those with the ability to read, the opportunities to do so were rare as manuscripts were jealously protected by institutions. Learning was based on verbal instruction - of one-to-one or one-to-many. It followed that in order to obtain an education, in terms of learning a language or academic skill, one was required to submit to the mastery of the instructor the distinct hierarchy within learning, the authority figure handing down information or knowledge as perceived wisdom could easily be maintained.

The printing press was undoubtedly an agency for social change. Its effects were vast, diverse and uneven in development. Some of these changes are indicated below;

The printing press has been credited for the development of what we now call scholarship and academic criticism; First, it became and remains a method to impressing a personal belief on the mass consciousness; Secondly it gave rise to a new class, the so-called "men of letters," a "scribal culture", intellectuals who constituted a distinctive social grouping, It contributed to the advancement of distinct intellectual disciplines whilst also breaking down established compartments

of knowledge established in the Middle Ages; Further, it gave the scholar the opportunity to develop new arguments which could be easily verified - "the portability of the book, like that of the easel painting, added much to the cult of individualism," writes McLuhan (1962). With Gutenberg's invention, gifted students no longer had to yield to their instructor beliefs, interpretations and biases; they could swiftly achieve mastery of a subject without assistance. Moreover, the printing press allowed multiple copies of the identical text. Thus readers separated by time and geography could examine and analyse the same text from different perspectives. We know from a reading of Eisenstein (1979) that "it altered methods of data collection, storage and retrieval systems and communication networks used by the learned communities throughout Europe."

It is a misconception to believe that this transformation occurred in the matter of a few years. It appears that the development of the print culture was unevenly phased over decades, even centuries. Although the key invention took place in the 15th Century, reading remained an esoteric phenomenon; one could not claim that Europe was a society tied to print until the 17th Century at the earliest.

Fixed Text

Although the press had powerful effects in terms of bringing information to a wider audience, it also brought with it certain problems. Once information could be easily produced on the printed page, those pages and books had to be stored and organised so that another could find that same information. The development of bibliographies, footnotes, indexes and pagination have all assisted with this process. In the late 20th century, electronic computerised searching within library catalogues has also considerably enhanced the process, but the problem is not yet solved. Nor is it likely to be. There can be no right "answer" to this problem - any library cataloguing system will be a compromise. Libraries may be the last bastion of true democracy left in western society in terms of free unhindered access to information yet they are themselves constrained in the methods of access by the nature of the medium with which they deal.

Library cataloguing must be organised to follow some form of sequential numerical and/or alphabetical system. A book can have only one discrete physical location. The alternative is for a library to buy many copies, to take account of the variety of different ways in which patrons might potentially access information. (This solution, in times of public spending cut-backs is totally unfeasible.) The only link between like material is a common classmark/call number and physical location on the shelf. However, any library cataloguing system merely reflects the way in which we have acquired and classified new forms of knowledge. Thus, the system causes as many problems as it solves. However, library cataloguing systems are not the only problem-the structure of the printed word itself requires the author to write down their ideas in a sequential manner - *"Print encourages a sense of closure, a sense of what is found in the text has been finalised, has reached a state of completion,"* writes Ong (1991). Yet not all thought is sequential - the use of footnotes verifies this. We believe that the human brain operates by association - Bush (1967) writes of the brain, *"With one item in its grasp, it snaps instantly to the next that is suggested by an association of ideas, in accordance with some intricate web of trails carried by the cells of the brain."* Thus, although we are non-sequential thinking beings, we are required to conform to sequential systems in order to communicate, research and think further. The word "text", according to Heim (1987) is derived from the Latin word for weaving and for interwoven material, yet through our adherence to the printed word, we have lost touch with much of its original meaning.

The advent of electronic text processing characterises a further paradigmatic shift from the technology of the printed book, a return to the true meaning of textuality. Landow (1992) writes, *"it promises (or threatens) to produce effects on our culture, particularly on our literature, education, criticism and scholarship, just as radical as those produced by Gutenberg's movable type."*

A Brief History of Hypertext

The original idea of Hypertext can be traced to a paper by Vannevar Bush (1945) called "As We May Think." In this paper, (which was a call to scientists to apply themselves in the new post-war era to the problems of accessibility to an increasing volume of information,) he envisaged a machine, which he called the Memex. The Memex would be *"a device in which an individual stores his books, records, and communications, and which is mechanised so that it may be consulted with exceeding speed and flexibility. It is an enlarged intimate supplement to his memory. "* Bush believed that using such a machine, the user could write directly onto one's own copy of a book or photograph that would be held on micro-film. These ideas were developed further in another paper called "Memex Revisited," where the now familiar terms such as links, linkages, webs and trails were introduced. Bush was writing at a time when computers were merely enormous number crunchers. He clearly thought it unlikely that his ideas would ever become reality for the average person and although the Memex concept received much attention it was never built.

The Memex concept was developed further by Dr. Theodore (Ted) Nelson. The term "Hypertext" was invented by Nelson. It is unlikely that any of the readership is unfamiliar with the term, yet for the sake of completeness, his definition is included - *"By Hypertext, I mean non-sequential writing - text that branches and allows choices to readers, best read at an inter-active screen. As popularly conceived, this is a series of text chunks connected by links which offer the reader different pathways."* Hypermedia is merely an extension of Hypertext to include other visual and audio data such as video, sound-edits, etc. Nelsons vision is called Xanadu named after Coleridge's poem "Kubla Khan", which although acknowledged as a masterpiece of English Literature, was developed from Coleridge's copious notes on others works. It is Nelsons intention to build Xanadu as a repository for everything that has ever been written - a modern-day Alexandrian library. Xanadu would be an digital enhancement to the human memory. Most of the information required by the individual user would be stored on their own PC and more unusual queries would be linked to "hyperbases" through an external network link.

Foucault (1971) writes *"the frontiers of a book are never clear-cut,"* because *"it is caught up in a system of references to other books, other texts, other sentences: it is a node within a network.. a network of references."* Equally, the birth of a book is rarely the effort of a single person - a cursory glance at the acknowledgements at the front of any academic text verifies this. If we follow this argument through, in an ideal academic world, we should be able to explore connections that we did not think existed quickly and easily. With Hypertext, we now have that opportunity. A hypertext system should have no central definition and no regular structure; it should be a web, a maze, a trail of information that allow users to follow the path that they feel is of most interest. Comparing this system of information presentation with a book, if the reader finds a point of reference that interests them, they must stop reading and pursue that inquiry separately in the library. This is both time-consuming and exhausting. With Hypertext we also have the opportunity to create connections where none were thought to exist. It allows the user to draw interconnections between disparate text. In turn, this may identify a deeper/different meaning from that originally envisaged by the author. It takes the reader from an experience in a single dimension, the linear to a reading experience in two dimensions, a plane of text that can be constantly traversed. Hypermedia adds a further dimension by providing the reader with graphics, sound-edits and video bites which may also be inter-connected, creating separate planes. Thus a multi-dimensional sphere or cube begins to form.

A Review of Critical Theory

It is difficult to define the meaning of Post-modernism. Indeed, to attempt to define Post-modernism would be an assault upon its constitution, for it seeks to undermine, to subvert, to deconstruct accepted understanding. It has affected many areas of human society, including literature, architecture, the arts and popular culture. In the humanities, it challenges the notion of Cartesian philosophy of direct cause and effect, arguing that all things are related and further argues that there can be no "objective self." Post-modernism argues that until one learns language, there is no self - it is language that makes us what we are: *"Man acts as though he were the shaper and master of*

language, while in fact language remains the master of man," writes Heidegger. Yet language is given meaning through context, through a myriad network of relationships. Therefore, if there is no objective truth, then the light that is reflected by the mirror of language held up to reflect the world, will be refracted, influenced by time and community.

Post-modernism's fundamental insight is that the meaning of anything is assembled by individuals who attempt to understand it from complex component parts which can always be fragmented and re-assembled in different ways into different meanings. Applying Post-modernism to literature, it argues that there can be no "true" authentic reading or meaning assigned to text. The act of reading involves the reader in taking account of those given symbols on the page and constructing meaning from them for his or herself, influenced by experience - a "reading between the lines." Thus, says Critical Theory, instead of true meaning there are merely 'privileged' meanings, i.e. those which are preferred or dominant. An examination of that meaning, the sub-text and its debate become more important than the text itself. Critical Theory asks the reader to deconstruct and reconstruct meaning in the readers head. Hypertext allows the reader to deconstruct and reconstruct on the page. This symbiosis of Critical Theory and Hypertext is developing in interesting and unusual ways. The key to the relationship between current Critical theory and Hypertext design is the de-centralising of the text.

Foucault (1971) writes of 16th Century language, it *"found itself caught...in the interstice occurring between the primal text and the infinity of interr'retation. One speaks upon the basis of a writing that is part of the fabric of the world; one speaks about it to infinity, and each of its signs become in turn written matter for further discourse."* He might well be referring to the experience of writing in Hypertext! What Hypertext brings is the ability to locate original text and subsequent commentary/analysis into adjacent spaces. Commentary was a product of the textual paradigm shift. Adjacent associative commentary is the product of the Hypertext paradigm shift. However, it also brings significant new factors into the equation. We also have the ability to write to the text as an equal authority. Hypertext allows one user to interact with a single body of text or for many users to act and interact. Of course, with a book, one could highlight and append one's own notes to the original text but the authority of the text still remains. Also, by having adjacent commentary so easily available, the result may be a development of the dialectic. There is the potential to locate thesis and anti-thesis in adjacent space Hypermedia brings into the equation new forms of commentary; if criticism matrices can append video footage or databases as evidence of validity of argument, we can create new dimensions of learning and academic interaction.

The potential in legal argument debate and discussion, whether adversarial or developmental, appears limitless. In any legal case, there will always be two conflicting views or stories, both usually incomplete. The judge is required to resolve these conflicting views of reality or of legal argument i.e. it involves the judge in a "reading between the lines," an attempt to find meaning and purpose from fact patterns, from precedent or from statute. Hypertext allows the two conflicting sets of values to be placed adjacent to one another in a way that traditional print does not allow.

The information technology revolution has driven the computer out of the mathematics laboratory and into the humanities departments. When one writes now, one writes to a computer not to paper. Yet writing and computers have a close relationship. Barrett (1988) writes *"writing and computers both employ symbolic languages to fix meaning to individual and social purposes. Thus there is a family of relationships that unites thinking, writing and computers."* Post-modernism states that language constantly re-creates itself, changing meaning - computerised text processing creates even greater semiotic disturbances. Derrida (1981) writes *"the form of the book is now going through a general upheaval"* yet one cannot *"tamper"* with the form of the book *"without disturbing everything else in Western thought."* We turn our attention to these potential disturbances that may occur as the Hyper-textual/network paradigm assumes prominence.

The Deconstruction of the Teacher/Student Relationship

Text gave the student the ability to learn alone, to think and to criticise so-called authorities, based upon their own interpretation, experience, understanding and context. Hypertext gives the student the ability to address the authority they seek to criticise as an equal, to write as well as read - contemporaneous criticism, a union of reading and writing within the same structure; in the words of Landow *"Hypertext ..creates an active, even intrusive reader."* He goes on *"one can destroy what we mean by the author, which includes the notion of sole authorship by removing the autonomy of the text."* Hypertext also provides anonymity to the new "writer." (The term writer becomes meaningless in this context - it implies notions of sole authorial control which are the complete antithesis of this vision; annotator may be a more appropnate term.) The politics of reading are shifting strongly in favour of the reader.

With the increasing use of the Internet, with its facilities for discussion, commentary and criticism, we can envisage Hypertext systems maintained in a similar way to a UseGroup, with interested parties subscribing to a particular hypertext web in order to learn, think and enhance debate. The simultaneous creation and removal of links by participants who are both writers/annotators would create a unique environment in which to explore ideas. Students could move beyond the regurgitation of sterile debates in their chosen field and develop their own ideas by creating new links between old material, creating new links to new material that they think relevant and interesting or merely explore the links developed by another. Academic reading of a sentence or paragraph, whether in printed or electronic form involves the reader in reception of the words and assimilation into existing thought structures i.e. the autonomous reconfiguration of meaning. However one student may find that the reading invokes a different set of thoughts from the next student. With Hypertext, both students thoughts could be set out for others to ponder starting from the same point in the web. Through linking, they can also re-construct their meaning in a way that allows others to considers its implications.

The Deconstruction of the Disciplines

The traditional university disciplinary system was introduced in 18th Century Prussia. It is debatable whether the system has any continued relevance to today's society. New subject areas are emerging which appear highly inter-disciplinary by more traditional standards. These subjects are not in the traditional mould of inter-disciplinary studies such as Law and Sociology or Law and Economics that have a clear inter-relation. They are a mixture of once-disparate sciences and humanities. Academia is beginning to come to terms with the complexity of knowledge. Business is also demanding well-rounded students with unique skills that border the disciplines. (In the legal context, one is far more marketable as a high-tech lawyer if one has a degree in the sciences as well as legal qualifications.) It would appear that discoveries about the complexity of knowledge and the tools necessary to deal with that knowledge, are both common ancestors of the digital revolution. In any event, the process of de-constructing the disciplines will be hastened by tools such as Hypertext.

Hypertext offer law faculties and educational establishments generally the opportunity to widen the appeal of their work to an inter-disciplinary audience. If we imagine for a moment a Hypertext web based on selected readings from a course in International Law which is available to students on the University network, then it may have readings of interest to political scientists, economists, historians, and philosophers. Why should students of International Law alone be privileged to read and research this area? Why should they alone bring the "privileged" interpretations developed through years at a Law School? Another potential application would be in the domain of legal theory - it is an open-ended and highly contentious field of study. There are large bodies of documentation that might be incorporated into such a Hyperbase. Students of linguistics, philosophy and semantics may feel that they have something to offer to enhance the level of debate which continues over time in such a Hyperbase, then they would have the ability to make their insights known. Yet it would be an extremely well-read and unique law student who saw an immediate connection between Wittgenstein and Hart!

The advantage of an editing facility is apparent - if what is added to the Hyperbase is patent nonsense then it will be "shot down" by other users who would build their own links and nodes in which they display their disapproval or contempt! If the comments are valid then yet more students and Faculty members from other Departments may wish to comment. Thus the myth of distinct disciplines may be dispelled - one can obtain easier access to existing discourse without having to be the member of any inner sanctum. In short, through Hypertext, you don't have to be part of the "in-crowd" to come to the party! Yet these systems should not be frivolous play-things. The building of a system can be incorporated into any course in the humanities. In doing so, students are required to critically analyse the text they use in the web; their system can become a focus for on-going debate, both during and beyond classes.

What might be the result of this? More students who are prepared to think for themselves, students prepared to challenge accepted ideas and notions? College lecturers have been lamenting the lack of original and critical thought in their students writing for many years (Oscar Wilde is quoted as saying "be careful what you ask for, for you may well get it!") Hypertext represents the potential to address at least some of these perceived imperfections. Hypertext may also change the way in which we write. First, we must be prepared to place our creation in an open forum for other to criticise or applaud.

Some Warning Signals

I What is wrong with a book?

Despite all this talk of the brave new academic world, there is something very re-assuring about a book. It is a physical entity; the information contained is timeless; one creates a permanent historical record. It is easily transportable. Expensive hardware and software is not a pre-requisite. There are certain things that one can tell from a book such as; the date of publication, the author(s) (there can be no anonymity); the publisher (as a source of other information on related topics of interest); it has a simple-to-use index; the information is difficult to destroy. Many people believe that Hypertext and Electronic linking can only be a "good thing", in that they enable many more people to access information i.e. they democratise and decentralise information access. The act of writing is an act that is part of the free dissemination of information, an essential part of a pluralist democracy. Therefore, (following this argument) hypertext, by allowing more people to write as equal authority adds value to this pluralist order. However, the book also is the primary method for the documentation of history; paper is more permanent than electron pulses. By allowing readers to interact through editing as well as reading, Hypertext represents a threat to the permanency of the record; it becomes possible to change an interpretation within a discipline much more easily. The book that automatically deconstructs itself into a meaningless jumble of constituent characters after one reading was developed as a novelty toy for computer junkies. Hypertext may represent a more powerful destructive as well as constructive tool.

II Copyright Problems

If this vision becomes reality, then there are immense copyright issues to be considered - the text, the intellectual property and its associated rights become blurred as there can no longer be any physical entity that authors can point their fingers at and state "that is my property." How then can "Intellectual Property" be "protected"? In the words of Harlan Cleveland (Gilbert, -1990) *the question contains the seeds of its own confusion: it's the wrong verb about the wrong noun."* No answers are submitted; the question is merely raised.

III Judging the Student

Hypertext and Hypermedia are also excellent tools for collaborative ventures. Bush's original memex machine was conceived as a tool to allow like-minded people to share their interests. In a context of

graduate studies, this represents a giant leap forward but if Hypertext is to gain general acceptance in the workplace, students should be educated in its building, application and use at an under-graduate level. Yet if individual authors are anonymous in Hypertext, how does one award the more able student? Upon leaving an institute of higher education, students take with them a set of marks that supposedly reflect their ability. Again, no answers -are submitted.

IV Creating Good Hypertext

Barrett (1988) states *"as linkages grow more complex the learner becomes trapped in an associative web that threatens to overwhelm the incipient logic of discovery that created it."* Hypertext is meant to assist one's access to knowledge rather than merely access to information, in an information-bloated environment. Yet if the link pathways through the matrix are too rigid then the potential for discovery1 originality and creativity may be lost. Hypertext authors must walk this fine line.

Conclusion

One might argue that the paradigm shift had already happened before the advent of Hypertext and that the cause was electronic text processing. With the ability to make a keyword search we can enter text from any point, not at page one as the author intended. But any academic reading is rarely entirely linear - that privilege is saved for fiction. The interest, the "action," for many academic readers is not in the text itself, but in the footnotes, indexes and bibliography. Writing is an opportunity to externalise ideas in a (previously) permanent form, to elaborate on ideas held internally. Yet few people write in an entirely sequential manner. Even authors of fiction, which relies on the sequential narrative structure will begin with characters and a rough mental sketch of the plot. Hypertext represents a truer external manifestation of the thinking process. It may be that in the future, we will look upon the book as an aberration in the representation of the true structure of the knowledge.

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