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The Social Work Docuverse

Roger A. Lohmann
West Virginia University, roger.lohmann@mail.wvu.edu

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The Social Work Docuverse:
A Challenge for the Twenty-First Century[1]

Roger A. Lohmann[2]
West Virginia University

Abstract

The impact of electronic technology on social work has not been fundamental or transformative in any way comparable to the impact upon a variety of other professions and disciplines. A major potential impact of electronic systems for communications-based knowledge systems like social work lies in the area of textual processing systems which are only beginning to come to the fore. This article concentrates on one such set of technology -- hypermedia -- which already makes possible the construction and delivery of a *social work docuverse* which contains an electronic knowledge base of the field. Actual realization of such a web and exploration of the vast networks of linkages it implies will be an enormous task which should be the first major scholarly enterprise facing social welfare scholars in the new millennium. Several major problems must be overcome in creating such a vast undertaking include a number of critical organizational, legal, educational and political issues. The very nature of the emerging technology together with the inherited traditions of professional education make such a task inherently a matter of the common good of the profession.

Introduction

The impact of computing on social work education and practice has, upon close examination, been relatively minor and superficial up to this point. Certainly, it is true that word processing complete with variable fonts and laser printing has already, or is about to largely replace the electric typewriter in social work and elsewhere. Word processing is still largely used to type the same types of documents, however – perhaps in larger quantities. Data base management systems and statistical analysis packages in research; spreadsheets in management, computer-generated test questionnaires, are all important, albeit relatively minor, concerns. The most fundamental distinction sought here is not between plainer typewritten or word-processed and fancier type-set documents, but

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[2] Dr. Lohmann is Professor of Social Work and Director, Nonprofit Mgt. Academy, School of Social Work, West Virginia University. He was named the 1995 Benedum Distinguished Scholar in Behavioral and Social Sciences at that institution. His 1992 book, The Commons, New Perspectives on Nonprofit Organization and Voluntary Action has been nominated for numerous book awards and was named the Outstanding New Book in Philanthropy by the National Society of Fund Raising Executives.

between texts (like books, articles, papers, policies, guides and directories) written for public viewing (literally, to be read by anyone) and texts (such as case records) intended for purely private readerships. For this purpose, a text is defined as an organized and systematic collection of related signs (words, formulae, tables, etc.) images (pictures, graphs) and audio or video recordings.

This article proposes a genuinely radical implementation in social work education and practice: initiation of an electronic *docuverse* or, on-line electronic web or on-line library, of all peer-reviewed and linked documents of interest to the profession. This proposal has the potential to dramatically transform the ways in which social work authors write, teachers, students and practitioners read, and the social work knowledge base is stored and remembered from one generation to the next. At bottom, it would transform the nature of "publication" in the field by making release of an article a public act and redefining the social work public as a readership. Publication, throughout this article is used in the generic sense of dissemination of a set of thoughts, ideas, research findings or other writings to an audience of readers, rather than in the narrow sense of printing manuscripts. (see Habermas, 1989) The principal purpose of publication is assumed to be dissemination of an author's writings for purposes of critical review and comment and "placement" within the knowledge base of the field. The more cynical purpose of accumulation of article "pelts" for purposes of status-grading within the higher education pecking order is rejected (or perhaps, subsumed) by this larger purpose.

While the impact of the proposal in this article may initially appear to be purely technical, the overall intent is substantive and twofold: 1) To free up the profession and higher education programs from growing and irrational pseudo-market constraints imposed on the dissemination of new knowledge of the field by limited publication opportunities offered by commercial publishers interested only in profits; and 2) To transform publication review from what has become, in many instances, an explicit censorship process to constrain the "marketplace of ideas" in social work into a more genuinely open process of genuine scholarly dialogue.

Minimal Impact of Computers

The impact of computers on social work education and practice has not been radically transformative in anything like the ways it has, for example, revolutionized teaching and practice in such diverse fields as advertising, accounting, architecture, journalism, medicine and law. Instead, electronic technology in social work tends to adopt the general patterns found in the social sciences and humanities, where it continues to be a narrow, specialized, concern of a relative few in each discipline. These developments have left largely undisturbed basic paradigms of social work education and practice worked out prior to the invention of the electronic computer. Computer enhancement, when it has been employed, certainly has speeded up retrieval of information from case records and data bases on available community resources. Whether it has speeded up or impeded "data entry" is a separate question. In particular, those operations still

being conducted with data entry from hand-written forms should be viewed as particularly questionable.

Meanwhile, computer applications have not in any meaningful sense transformed any of the fundamental tasks of social work, in the manner, for example, that Computer Assisted Tomography (a.k.a. CAT-Scanning) and Magnetic Resonance Imaging (MRI) and dozens of other, similar computer-based technologies have transformed medical diagnosis. Nor has any impact of computing upon social work education or practice been anything like the impact of electronic funds transfer on personal and family banking practices, or the impact of computer-assisted design (CAD) on engineering and architecture.

I have consistently maintained for more than a decade that one reason for this is failure of those interested in computer applications to come to terms with the real nature of social work information and activity: Social work practice is fundamentally a communications process and social work information is typically encoded in the ordinary everyday language of human discourse. (Lohmann and Wolvovsky, 1979; Lohmann, 1982; Lohmann, 1983; Lohmann, 1986; Lohmann, 1990.) The telephone – not the computer – remains the most important technological innovation in the history of social work practice. With the growing convergence of telephone and computer, however, the horizon of implications for potential social work applications is correspondingly increasing.

Also important in the relatively minor impact of computing on social work teaching and practice, perhaps, is that social work is still – comparatively speaking – a very small potential market without significant market leverage and invisible to the computer scientists, venture capitalists and software and hardware entrepreneurs who are at the cutting edges of computer innovation. On the whole, the greatest potential for computer applications in social work education and practice still lie well into the future. Indeed, whether there is to be an electronic future for social work in any but the most superficial sense at all presently remains an open question.

A Communications Technology

A new group of technologies has been emerging in recent years near the convergence of telephone and computer which deal more directly with the elements of human communication as it is most commonly experienced in social work – words, texts and messages. Together, these technologies possess real potential for fundamentally transforming the nature of the collection, storage and retrieval of all types of practical and theoretical knowledge in social work. Not the least of these impacts will be the effect upon the publication of knowledge. Indeed, as the gradual (relatively speaking) convergence of telephony with not only the computer but also the tape recorder (e.g., telephone answering machines), fax machine, audio and video recorders, compact disk and other means of electronic communications continue, the implications for social work education and practice become correspondingly more interesting.

One of the most interesting aspects of the development of communications technology is the early emergence of unprecedented opportunities for communicating through multiple media – voice, digital data, still photos, video – across virtually any distances in real time. There are many highly technical aspects to this topic worthy of exploration for their implications for social work education and practice – ISDN, wide-band transmission, "real-time" video conferencing, video-phones, and wireless local area networks (LANs), for example.

Rather than concentrating upon speculative exploration of the farthest reaches of such technology, however, this paper seeks to make a more prosaic point: The technology is already largely in place to create an international electronic repository of historical and contemporary social work publications which could, if we desired it, contain every text in social work ever published, and incorporate multiple levels of "hypertext" connections to allow students and practitioners to move easily between related points. Both because the initial costs of constructing such a library would be very high and because the technology for constructing it is already widely available and in the public domain, the most feasible way to approach this project would be as a collective enterprise of volunteers from the entire social work commons of researchers, educators and practitioners. A commons is a social (not necessarily formal) organization characterized by uncoerced participation, shared purposes, shared resources, and norms of mutuality and fair play. (Lohmann, 1992)

The technology of the Internet, World Wide Web servers like Mosaic and Netscape, and document markup languages like HTML (Hypertext Markup Language) are widely available and easily learned. Mosaic is a WWW "client" or "browser" which reads and interprets (or parses) HTML markups. It was written at the University of Illinois Supercomputing Center and is in the public domain. Mosaic clients are available for Macintosh, Windows and X-Windows platforms. Netscape is a second generation WWW browser, written by members of the UISC team for commercial applications. It is free for educational users.

In computer jargon, an internet is a network of networks, while "the" internet refers to a particular world-wide configuration of linked internets which began in the late 1960's as a project of the defense establishment to create a destruction-proof computer network, and has since become a mainstay of general academic computing and is currently proliferating to all levels of all advanced industrial societies. The World-Wide Web was originally a creation of the CERN High Energy Physics laboratory in Switzerland, whose original purpose (distributing hyperlinked papers among a group of interested physics researchers) is very close to the purpose proposed here.

In order to fully appreciate the implications of this technology, it must be experienced directly. The Advanced Projects Group of the Center for West Virginia Families and Communities at West Virginia University has been working since late

1993 on a demonstration of some of the ideas suggested here.[3] One starting point will be to assign each document in the docuverse a unique URL. In internet parlance, a URL (or Universal Resource Locator) is a universally available unique internet address (much like an 11-digit ZIP code, with a specific document name thrown in for good measure.) Anyone with a Web browser and such a URL could then locate that document.

In order to more clearly understand the proposal for a social work docuverse set forth here, it is necessary to deal with some additional terms and concepts. In the remainder of this paper, we shall speak of hypertext and hypermedia, docuverse, text, collection, *oeuvre,* canon, hierarchic writing, compound documents, and knowbots as the basis of a social work electronic library. Hypertext refers to texts containing links to other texts or other media. Linked texts, images, audio or video recordings, are hypermedia. A collection is defined here as any related set of things. In literary studies, an *oeuvre* refers to a collection of texts (or body of work) authored by a single author, or a group of authors. (e.g., the *oeuvre* of Shakespeare or the Romantic poets.) In social work, we can speak of the *oeuvre* of Jane Addams, Mary Richmond or more recent figures like Robert Morris or Ralph Kramer. Canon also is a term from literary studies. In this case, the social work canon refers to all texts recognized (by social workers) as part of the body of social work knowledge. On the basis of these concepts, a number of observations will be offered on a hypertext model labeled Traditional-Established Scholarly Hypertext (TESH) as a way of adapting these ideas to the social work docuverse.

 The most fundamental assumptions of this study are that: 1) publication of texts – articles, books, manuals, textbooks, conference papers, policy statements and other public texts – is one of the central and most important processes in the communication among various members of the profession; and 2) that the entire process of review and selection for publication in any scholarly, scientific or professional field is for the purpose of communicating – expression of new ideas, distribution of findings and conclusions, critique of established ideas, etc. – and not for certification of established truths.

Multimedia and Hypertext

Hypertext and hypermedia have rapidly moved from the farthest reaches of innovative technologies where they have languished for the past two decades to the mainstreams of the workaday worlds of education and practice in many fields. Hypertext was defined in the 1960's by Ted Nelson, the inventor of the term, as "nonsequential writing". It has also been defined, more recently, as a "technology for collective memory, for preserving and passing on human experience." (Bolter, 1991, quoted by Sharples, 1992) Of course, the same may be true to some degree of all writing (or at least reading). Yet, hypertext is a uniquely electronic nonlinear writing format which enables writer, reader, or both to establish linkages in the

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[3] Several of the links in the original manuscript were to now-obsolete technology, particularly a pre-internet, web-based server named Gopher located at the University of Minnesota. As far as possible, they have been updated to permalinks at the WVU Research Repository (https://researchrepository.wvu.edu).

physical flow of text which parallel or mirror, in some fashion, the logical or semantic flow of ideas in the text. Hypertext thus appears to be uniquely capable of preserving not only a spatial and temporal sequence of ideas, but also many of the exact connotations (or at least those which are conscious and deliberate) intended by a writer.

Much has been made – somewhat erroneously, in my view – of the "destruction" of the act of writing in hypertext by allowing the reader to create her own text, as it were. That will be the case only when the original hypertext is created to allow linkages between semantically unrelated – from the author's view – fragments or elements. (E.g., links between different sentences or different paragraphs in a single text.) The far more revolutionary potential of hypertext is for author (or editor) to insert hyperlinks between texts which allow the reader to experience multiple pathways (and multiple connotations) more or less sequentially after the traditional manner of reading.

Another of the fears of hypermedia is that visual images will completely replace writing. This need not be the case, and in fact is highly unlikely in instances like social work knowledge, which has proven to be heavily word-encapsulated and remarkably lacking in non-verbal images. Even the few diagrams and charts which are widely used (e.g., systems diagrams) tend to be aids to understanding verbal ideas, rather than free-standing images.

Yet, the potential of forms other than pure text is clear: A written table presenting complex statistical findings, for example, is typically far clearer and more persuasive than a "talking heads" presentation of the same findings, and often a graph or chart of the same data is even more clear.

Several hypertext concepts can also be easily carried over to simple word-processing, as a kind of interim step. For example like many writers, in authoring any text I typically do multiple drafts. I learned from the Mosaic browser to associate text colors and temporal sequencing. In the various drafts of the present text, for example, black characters (on a white background) carry the connotation, "this is finished" from the earliest draft through the finished product. (For the simple reason that printed text almost always appears black-on-white.) At earlier stages in the writing process for this manuscript, blue text meant "this is preliminary & needs some work" and fragments of red text at the end (or in other windows) meant "FAIR USE ZONE!   These are reference notes and quotes from earlier publications! Don't include without proper citation!"   Blue was chosen for no other reason than it is fairly easy to read on my screen, and red because it's the universal color associated with "Stop!" Other writers and editors in this volume and elsewhere may have used their own private hypertext color codes with similar intent, while the final results are uniformly black on white – a certification by author, editor and publisher of a certain measure of completion.

Hypertext is usually presented in the form of active "links" between different documents or parts of documents. Yet, such links need not be limited to

nonsequential strings of texts. This is where the concept of hypermedia, or linkages between radically different information media, enters in. Hypermedia are generally concerned with links between texts and media such as drawings, photographs, graphs, and audio and video recordings.

There has been sustained development in social work during the past several decades of the use of video and audio tapes as case records and teaching devices, but very little sustained use of such materials in the published literature, for obvious reasons. One of the greatest potentials of hypermedia, in fact, is the potential for such applications. It is not difficult at all, for example, to imagine an electronically published report of research on homelessness incorporating a series of video segments on various types of huts, cardboard boxes and other shelters built by homeless persons in different urban settings.

 The uninformed reader may protest at this point that meaningful use of such audio and video materials in a manner analogous to tables and footnotes is not practical. Yet, close watching of television will reveal the average video shot or "snippet" on the evening news lasts roughly from 5 to 10 seconds, and creation of digital files of that length is indeed quite practical today with various standards like QuickTime. Inclusion of brief audio and video segments as illustrative materials in basic textual presentation is no more likely to destroy overall structure of written communication than the introduction of photographs into printed books did decades ago. Moreover, audio and video "footnotes" in which authors elaborate or explain may well be a boon to professional communication.

A Natural Emergence

The tasks of scholarly publication in the social work literature are, for most of us, fundamentally non-profit in character, even among private practitioners and corporate employees: Very few people in the field get paid directly for reading the social work literature, and fewer still make anything approaching an adequate income from writing it! For most of us, we read and write out of other, more fundamental commitments – to clients, problem-solving, career advancement, making the world a better place, and other similar notions. Whatever other economic or pecuniary interests may be served in the longer run, however, the acts of writing and publication themselves have a heavily donative quality for most social work authors: We write articles and *give* (that is, present) them at conferences and meetings, after which we *give* (that is, submit) them to journals for review, where we are *given* the unreimbursed comments of peer reviewers, and when we are lucky the article is eventually published, for which we receive no direct compensation. Income generation and profit-seeking are not, for most social work authors, primary motivations. (Books and book chapters are partial exceptions to this, but again, it is generally not possible to make a decent living solely from writing social work literature.)

The TESH Model

A number of radically divergent models of hypertext can be identified. Traditionalist literary scholars, for example, periodically get into an uproar over the prospect of future electronic novels which would allow readers to construct their own plot lines and generally share in the creativity of fiction authoring. What is proposed here is quite distinct from such musings and generally leaves intact the authority of authors over their own texts. Concern in nonfiction writing of all types is some manner of fidelity to reality external to the text. This imposes a discipline upon writer and reader which must be respected: Creatively rewriting reality to construct what might/should/could have happened is usually not a major concern in such writing. As such, the impact of this proposal lies in the delivery, and not in the construction of authorial meaning and fidelity to the facts.

In an earlier paper (Lohmann, 1994), available on-line I laid out a model of hypertext called Tradition-Established Scholarly Hypertext (TESH) in the context of the interdisciplinary commons of nonprofit or third sector research. The major points in that paper apply equally well to the commons of social work knowledge builders as well. "Knowledge builders", in this context, refers to the researchers, scholars, theorists and creative practitioners and teachers who have shape and mold social work knowledge.

In particular, that paper proposes a TESH docuverse composed of separately-maintained electronic archives composed of collections of electronic texts featuring the *oeuvres* of different authors and located on different, physically separate machines, but tied together electronically in a World-Wide Web through tradition-established scholarly techniques like footnotes and reference citations, as well as special linking or convergent documents similar to bibliographies and literature reviews. Such structuring has the potential to bring a recognized order out of the chaotic docuverse of all such collections becoming available on the internet, just as it has brought order to traditional scholarship for the past several centuries. The social work canon would represent a physical as well as a recognizable unity, tied together by hypertext links.

The TESH model calls for thinking about the electronic canon of any discipline, science or profession in terms already well refined in the pre-electronic "age of print" and composed primarily of texts, monographs and collections of texts. One familiar pre-electronic collection of texts, for example, is the published conference proceedings. Another is the journal, usually organized into volumes by distinct issues. And a third is the edited volume often known to publishers as a collection or an anthology. A fourth miscellaneous (and nuisance) category is that collection of unbound conference papers, working papers, white papers, executive summaries, position papers, pamphlets and other fugitive documents which most of us accumulate, and never quite know what to do with.

Defining the Social Work Canon

One widely understood problem of all efforts to define a canon, whether in literature or science, is the problem of reaching agreement on the texts to be included. Thus, the debate over multiculturalism has created significant canonical tensions in literature over the relative weight to assign traditionally recognized works by "Dead White European Males" and various women, minority writers and those writing in the traditions of other languages and cultures. The problem of what to exclude and include in any literary, philosophical or scientific canon is a more generic one, and transcends this particular debate. In scientific and professional fields two guiding norms associated with the idea of intellectual progress seem to apply: 1) Written material which contributes to the "advancement of knowledge" should be added to the canon on the basis of a process of peer-review; 2) Materials drop out of the canon only through disuse.

Peer Review and Disuse

Widely-recognized norms of peer-review also suggest the need for some levels of critical review and commentary on this collection as well. Whether and how the electronic social work docuverse should incorporate the current widely practiced "gatekeeper" function of preventing publication of unpopular or "erroneous" scholarly works is an important question which cannot be examined here. Disuse is to be distinguished here from destruction or disposal, for the simple reason that there are many historical instances of particular texts dropping out of the active canon of a field, only to return at a later date. It seems quite likely, for example, that after great popularity at least through the 1950's some of the writings of analytically-oriented social work authors like Gordon Hamilton and others have, at least temporarily, dropped out of the social work canon.

In any case, it is altogether possible to speak of working with the *complete* set of all texts bearing upon the social work knowledge base. However much we might disagree among ourselves about the inclusion of particular texts, we can agree in principle that such a set could be defined and, so far as we know, all texts in the set exist. Unlike Greek drama or philosophy, for example, there are no known lost masterworks in the social work canon, partly due to the relatively recent origins of the field. Thus, it should be theoretically possible to create a complete set of all social work publications. The problems presented by such a task are matters such as the resources necessary to collect such a library, and the logistical and legal obstacles. The resource issues might be handled through a system of voluntary cooperation. The legal issues – particularly copyrights – are more difficult.

The Underlying Technology

One thing which is clear is that technology is no longer an issue. Rudimentary (and in some cases, highly sophisticated) forms of the technology necessary to carry off such a scholarly project are already widely available on the internet, in both public domain and commercial variants. Most fundamental to this project is the World Wide Web (WWW) and Web browsers and servers which interpret Hypertext Markup Language and HTTP protocols.

Hypertext Markup Language (HTML) is itself a special subset of the Standard Text Markup Language (STML) that is widely used by commercial and other publishers. HTML allows placement of "embedded" anchors within European-style quotation marks, much like printer commands on some computing platforms. For example, the HTML designation for a new paragraph is <p>. In addition to controlling display of "fancy text" features (bold face, italic, different fonts, headline sizes, etc.), the explicitly "hypertext" anchors of HTML allow establishment of electronic links between different parts of a document (e.g., between a footnote number and the text of the footnote). When activated (for example, by "pointing and clicking"), the text pointed to in the link is displayed on the users screen. Likewise, external links from one document to another (like those implied in a reference or bibliographic item) can be similarly activated. Meanwhile, WWW-browsers like Mosaic which "read" and interpret HTML anchors allow for backward as well as forward migration through a series of such links (with what amount to "return" or "undo" anchors). Further, such browsers also mark (in different colors or type) pathways previously explored and allow setting "bookmarks" which can return the browser to a particular point.

Redesigning Authorship: All Those "Mute, Inglorious Miltons"

One of the most profound implications of the proposal offered here is the likelihood that it may actually result in substantial changes in the ways in which people write for publication. Five changes are of greatest immediate interest: 1) a considerable expansion of the range of publication outlets at only slightly increased total cost; 2) on-line peer review; 3) creation of an expanded venue for critical, interpretive and integrative works; 3) shortening and condensing the typical research report; and 4) the possibility of an entirely new authorial style, which might be termed "hierarchic writing." Let's examine the first three of these very briefly, and look more closely at the last.

There has been a dramatic and continuing explosion of the number of social work journals over the past two decades. In the third edition, the standard listing by Mendelsohn of social work, social welfare, human services and related journals includes well over 100 entries. Even so, changes in promotion and tenure requirements for social work faculty coupled with the dramatic increases in the number of accredited programs means that the supply of manuscripts seeking publication still far exceeds the available outlets. A cursory review of the estimated acceptance rates published in Mendelsohn will show that the majority of journals reject over half (and many reject over 90%) of all manuscripts submitted. Establishing an on-line publishing system offers a way to dramatically and easily expand the number of publication outlets without correspondingly dramatic increases in publication costs.

On-Line Peer Review

A large, and growing, number of electronic journals in many different fields have already demonstrated to all but the most skeptical that on-line peer review is not particularly problematic or troublesome. In fact, on-line peer review opens up some unprecedented new possibilities for social work. Thus, a system of on-line peer

review might also generate four levels of peer review to supplement the present two: Anonymous public review comments could, as a matter of course, be published along with every article published on-line, and become a substitute for the present system of censorship in the name of quality control: If an article is of "poor quality", let anonymous reviewers say so but also give those readers who choose to do so the opportunity to judge for themselves and express their disagreements. It is in such dialogue, and not in high rejection rates, where the essence of scientific peer review is to be found.

At the same time, there must still be a place on-line for private comments to the editor and through the editor to the author. Existing e-mail systems are already adequate for such transactions. Finally, an on-line system should allow for reaction/review comments to be added by readers, much like letters to the editor of a book review journal.

The very dynamics called for by the emergence of on-line publication also contain unprecedented opportunities for the emergence of specialized forms of literature review, commentary and critique. Such syntheses are particularly useful to busy practitioners without the time for more detailed reading. Generally, contemporary social work journals are reluctant to publish such literature reviews, however, because of space limitations. Incorporation of hypertext links in such reviews to the original texts reviewed would go a long way toward integrating the knowledge of the field to an unprecedented degree.

In the traditional scholarly mode which could well carry over into the electronic environment, such integrative works have been the forte of two groups: doctoral students seeking to master segments of the canon and senior scholars whose mastery and "long view" can bring new and higher levels of integration to the existing canon.

Much (perhaps as much as 50% in some cases) of the length of the typical journal article is highly redundant repetitions of earlier published work, because it cannot be assumed that such work is familiar to the reader or readily at hand. In particular, the initial argument, background information and the literature review are typically rehashes.

Hierarchic Writing

Whether the process of creating the type of electronic docuverse proposed here would have substantial implications for the ways in which social work authors write is an intriguing one. Adapting traditional scholarly practices to the technology of word processing has been, for many, a highly salutary experience. It is much easier to prepare numerous drafts of a manuscript electronically than it was to do so by the "rip and retype" method of typewriting. There is reason to suspect that the process of adapting to constructing hypertext in the TESH vein could be similarly painless – newer and easier ways of doing a traditionally valuable but onerous task.

Beyond this simple adaptation, however, full exploitation of the electronic environment will involve some major innovations in authoring practice, such as those suggested in a provocative article by Adkinson (1993). I will refer to these practices as "hierarchic writing", by which I mean roughly acts of writing which incorporate "three-dimensional stratification": Scholarly publication "not in the traditional linear sequence, but rather as a set of linked or self-citing levels or strata." (Atkinson, 1993, 208) A hierarchically authored document "might consist of a top level that would contain some kind of extended abstract; this level would then be connected to the next level, and so on. Each succeeding level would include the information contained in the previous level, but would provide in addition greater degrees of substance and detail." (Atkinson, 1993, 208)

For busy professionals, wishing to be guided by knowledge, but not always needing to confirm the exact or complete details of methodology or the entire documentary history or circumstances through which a particular piece of work evolved, something like a "hierarchic reading" has long been appropriate. The widespread use of abstracts serves this purpose at the most general level. Scanning of texts is also already a widespread, if unsanctioned, practice among students and professionals alike. Scanning always involves risks, however: The reader may miss an important point which the author has misplaced or buried deeply in the text. Or an ironic or self-negating idea can be easily misinterpreted out of context. Construction of hierarchic texts in which several levels of generality are seen by the author to be explicitly consistent and a desirable improvement in the dissemination of social work knowledge. To do so in a print environment, however, has proven to be difficult, costly and frustrating for author, editor and reader. Such constructions may be a unique potential of hypertext.

In order for such writing to become established within a canon like social work, "(t)here should be some standardization of levels, such that the reader would be able to decide which level to access first, depending on his or her previous knowledge of the subject and on the extent of the information required." (Atkinson, 1993, 208)   Thus, for example, in social work we might write at the levels of citizen-volunteer, associate, BSW, MSW and DSW/Ph.D. and perhaps the added experience levels of novice, apprentice and master. (As every experienced writer knows, simply having these different audiences explicitly in mind during the writing is itself be a major boon.)

Atkinson proposes also that "(t)he top level should contain for indexing and access purposes all terms in the work considered by the author to be critical." (Atkinson, 1993, 208) A primitive version of such self-indexicality exists in present editorial requirements for authors to submit lists of keywords. The electronic environment, however, considerably enhances the possibilities here, even while easing the task of selection and designation. (Developing a standardized way to insert key-word "markers" directly into the text could be made no more difficult than the key strokes by which footnotes are inserted into a word-processed text.)

Also, "interaction with the textual history of the subject should become a much more integral aspect of both writing and reading in a fully networked environment." (Atkinson, 1993, 209) The apparatus of footnote, reference list and bibliographic citation, when activated as "pointers" to referent texts enable precisely that kind of active interaction with the textual history of a subject.

The Fabric of a Text

In hypertext which is written on the basis of this kind of concentric stratification, the reader may work in three dimensions: (Atkinson, 1993, 208) Thinking through the three dimensions can easily bring confusion to all but the most disciplined thinkers. Perhaps it is helpful to think of a hypertext as a fabric, woven together with words and characterized by warp, weft, and woof: Thus, one should be able to read horizontally or linearly within any given level. ("warp") The warp of a text consists in the flow of sentence upon sentence, paragraph after paragraph from beginning to end. A second textual dimension are the links which flow vertically or hierarchically through the levels of a particular text ("weft"). The conventional comment "as discussed below", for example, might incorporate a hypertext link to the beginning of that discussion below. The third dimension ("woof") flows referentially back through the constituent citations (explicit or implicit) into the links with other texts.

"If the reader is going to read in three directions, then the writer is, of course, going to have to learn to write in three directions -- a very different notion of writing from that done in the linear print environment." (Atkinson, 1993, 209) "At the very least, the writer will need to create the work hierarchically in linked levels." Begin with an outline and expand in stages "with each stage functioning eventually as a separate text-stratum." Atkinson also recognizes the linking potentials of TEST: Such "writing will also need to include connections to explicit citations."

Compound Documents

Many of the notions embraced by Atkinson and others about hypertext may appear initially to be strange and forbidding. However, in the TESH environment, we can recognize immediately that many of the principles he espouses are, in actuality, already present in the kind of writing taught in typical freshmen composition courses: For example, a scholarly hypertext might be more recognizable if it were defined not simply as what is traditionally referred to as "the paper" with its beginning, middle and end and citations, but as a compound document composed of several other related texts, including the outline, the notes, etc.

Each of the components of the author's repertory may prove useful in the warp, weft and woof of the electronic context. Thus, the traditional thesis sentence advocated by writing teachers becomes an external link to the text when added to a "master list" of such thesis sentences for the canon as a whole (suitably organized in

some manner and electronically searchable.) Assembling and such an inventory updated would be an appropriate task for knowbots (see next section).

It also becomes a quick reference point for the appropriate electronic addresses (URL's) of documents for other scholars preparing literature reviews or commentaries. Similarly, a topical outline corresponding to Adkinson's second level and written at something like the level of detail of the table of contents found in many nineteenth century monographs, might also incorporate pointers to the text. Separately, the author's abstract should perform online its familiar function of briefly restating the argument and, in the case of research reports, summarizing the findings. (Even the eccentric and tedious extended abstracts – nearly half the length of a journal article – mandated by the Council on Social Work Education peer review process may find a place in the electronic environment.)

At the third level, the main body of a text (whether article or "book"/ monograph) could still follow the familiar conventions of Aristotelian rhetoric (with a beginning, middle, end), while incorporating three distinct types of hypertext links. First, the familiar form of embedded text note (author's last name, date, page number) could be "wired" to present the full citation when activated. Secondly, this citation, in turn, could embed the URL of the full text referred to, so that could also be recovered with a selection. Thirdly, extended footnotes containing definitions, annotations, elaborations and the like could easily be included in separate documents and linked.

There are other potential implications of compound documents in a hypertext environment which are likely to emerge as the social work docuverse and the methodology of hierarchic writing unfolds. In the following section, one more interesting implication of developing the knowledge base in an electronic environment will be explored.

Knowbots

A knowbot is a somewhat speculative concept in the context of the present internet, yet the potential is certainly already there in part and clearly recognizable. A *know*ledge ro*bot* is an intelligent program which might roam the internet performing various useful tasks, assigned by its owner. Initially, knowbots might be thought of as something like social worker viruses, traveling about being helpful rather than creating havoc.

For example, existing software programs which reconcile version differences between documents with the same titles on portable and desktop machines, and programs which reconcile group calendars on a network, so that everyone is aware of scheduled meetings are both examples of knowbot-type programs.

In the context of a social work docuverse, a knowbot might conduct regular surveys of an assigned group of archives for its owner, for example, to identify new postings of articles on an assigned topic and automatically retrieved the top-most hierarchic texts (either topic sentences or abstracts) from relevant compound

documents. Such electronic assistance would be extremely helpful to researchers and scholars. Another useful knowbot would be one which would routinely scan for items of particular interest, such as citations of a particular author's (or one's own) works, juxtapositions of particular topics (AIDS and grandmothers, for example), and the like.

In a practice context, a knowbot might be extremely useful which would routinely identify topics from one's private case records and identify and assemble (or update) "briefing documents" of appropriate hierarchic texts from relevant published research on those topics. Such a knowbot might also be programmed to automatically remember links back to the identified text, so that the human professional who wanted more detail could easily get it.

Knowbots may also be useful in protecting the integrity of works published in a docuverse. One such protection, more closely related to dynamic indexing than may at first appear, would be for audits by knowbots programmed to scan the docuverse for evidence of plagiarism. Much like conventional financial audits, the results of such searches could be routinely reported and publicly available in some form, as a deterrent against unscrupulous and unauthorized use.

The Genie Is Already Out Of The Bottle

How likely is it that the social work docuverse proposed in this paper might actually come about? What are its implications for the nature of scholarly and research activities in social work?

Something like the docuverse proposed here is already practical and rapidly developing in various contexts. The Library of Congress has recently endorsed ideas of similar nature, based in part on a far-reaching study by the Association of Research Librarians. Organizations like the Institute for Scientific Research (publishers of Current Contents) and CARL (Colorado Association of Research Libraries) and NASW are already producing parts of the bibliographic infrastructure of such a docuverse. Meanwhile, electronic networks are improving rapidly and individual investigators are working on pieces of this.

CD-ROM publication of *Social Welfare Research and Abstracts* already makes it possible, indeed easy, to download a bibliography to disk and, using a conversion program like Bibliolinks, to upload it to a bibliographic data base like Pro-Cite. Key words in a descriptors field can allow for creation of fully-formatted bibliographies for course syllabi or as reference lists for articles.

Commons or Supermarket of Texts?

The most complex and far-reaching question posed by this proposal and the largest present roadblock to its implementation is the legal issue of copyrights. At this writing, there are two fundamental divergent visions operative at present: One of these is the essentially nonprofit vision of the internet as an electronic commons, demonstrated by the original BITNET group of universities, and espoused by

groups like the Network for Civic Computing and various community free nets. (Cisler, 1993) The other is the Clinton Administration's affirmed commitment to a pay-as-you-go commercial version of "the electronic superhighway."   We might think of these as the electronic lending-library vs. the electronic bookstore. Now is the time when social work, as a field, should be considering closely the issues raised by this debate. Although the distribution of costs would be somewhat different, there is no inherent reason why either the nonprofit library or the commercial bookstore approaches would render the kind of docuverse proposed in this article unworkable.

In the broader electronic universe this issue may already be settled. A March, 1995 article in the Chronicle of Higher Education concludes that "(t)ime is running out for colleges to insure that students and faculty can routinely use electronic versions of copyrighted works without seeking permission or paying a fee. In fact, a combination of political and technological developments already may have put that goal beyond reach...." (Jacobson, 1995) Whether and how such a settlement will prove enforceable within particular professional fields like social work remains to be seen.

Social work authors generally have a more fundamental interest in widespread dissemination of their ideas and expressions than in asserting or defending their intellectual property rights. Of course, no author wants their ideas or writings improperly appropriated by others or copied without attribution. Thus, protecting authorship will remain a primary consideration in an electronic environment. Much of copyright law, however, is concerned less with protecting the integrity of authorship, per se, than with protecting the property interests which arise in publication.

The existing system of copy rights, while nominally intended to protect the integrity of authors, in fact, acts largely to protect the investments of publishers at present. In this context, the typical social work scholarly authors' primary interest in copyright law is, more concerned with protecting claims of authorship and the integrity of specific texts than with financial interests. (Royalties are almost never paid on journal articles, and total royalties on book chapters in scholarly works often do not exceed $10.)

At the same time, publishers are uniformly – and understandably – interested in protecting their investments. Great time and energy may be invested in editing, cost of paper and ink, printing technology, and in the case of commercial and "commercial nonprofit" publishers, assuring a surplus over expenses. The category of "commercial nonprofit" is from Henry Hansmann, (1980; 1981). It can be applied particularly to those university presses and other legally nonprofit publishers (like NASW Press and the historically important Association Press) who follow the lead of commercial publishers and skew their publications lists heavily in the direction of higher selling manuscripts, and do not pursue the traditional practice of "the book trade" (both commercial and nonprofit publishers) of also publishing what are

considered "important" works with little sales potential. Such investments can easily run into the millions.

It is ordinarily a matter of indifference to both reader and writer of social work literature whether the book market is up or down, paper costs are rising, inventory is not moving or advertising competition is fierce. These are the unique concerns of publishers. It is, however, a matter of some considerable importance to a field with pretensions of being an "applied science" whether the latest research results confirm or discount existing practices. Yet, in the present environment, it is more the former than the latter which govern many aspects of the publications process.

The whole system of copyrights as it applies to scholarly publishing is seriously threatened by the emergence of computer technology, and it is completely unclear what the outcomes will be. As print publishers have feared for several decades, the most basic characteristic of electronic hypermedia of the present is that they are quite easily copied and disseminated. Even in the short term, the proliferation of scanning devices and optical character reading software and their use by knowledge workers interested only in accessing and using available knowledge represents a substantial threat to publishers and author's copy rights. Long term, however, the differential implications of these threats will likely lead to a parting of the ways of professional authors in social work and commercial publishers.

Conclusion

The technology necessary for creation of the social work docuverse is already largely and widely available. The challenge to the profession posed by this technology is whether and how to best use it. Although past use of electronic technology in social work has not been fundamental or transformative compared to other professions and disciplines, creation of social work docuverse could transform the ways in which we create and use knowledge in practice and education. Continuity and intelligibility of the electronic docuverse can best be assured by following Tradition-Established Scholarly practices to create an on-line knowledge base integrated by Hypertext links. Creation of an electronic docuverse for social work may bring about significant long-term changes in the manner in which texts are authored. Because the resources do not exist to underwrite the costs of creating such a docuverse, a strategy based on voluntary cooperation in the social work commons seems most advisable. However, the larger electronic universe appears headed in a more commercial direction at the moment. Either possibility could be embraced by the social work docuverse of the future.

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