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INFORMATION SEARCH PROCESS OF LAWYERS: A CALL FOR 'JUST FOR ME' INFORMATION SERVICES

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The study reported in this paper is part of a programme of ongoing research based on the model of the Information Search Process (ISP) developed in a series of prior studies by Kuhlthau. This study sought to gain a better understanding of the variety of tasks that involve lawyers as a particular group of information workers, how they use information to accomplish their work, and the role mediators play in their process of information seeking and use. Findings revealed that these lawyers frequently were involved in complex tasks that required a constructive process of interpreting, learning and creating. To accomplish these complex tasks, they preferred printed texts over computer databases primarily because computer databases required well-specified requests and did not offer an option for examining a wide range of information at one time. These lawyers called for an active potential role for mediators in 'just for me' services. 'Just for me' services would encompass designing systems to provide a wider range of access more compatible with the process of construction, applying and developing principles of classification that would offer a more uniform system for organising and accessing files, and providing direction in filtering the overwhelming amount of information available on electronic resources.

This issue of the *Journal of Documentation* honouring Professor Tom Wilson gives me the opportunity to explain how his work has influenced my thinking and so I begin with my reflection on the aspects of Wilson's writing that I have found particularly pertinent to my research. I first came across Wilson's work after I had been studying the information search process for several years. My research had revealed the user's affective experience as an important aspect of information seeking that had substantial impact on the actions users take and the choices they make. I had also found that affective experience changed significantly in the process of constructing new knowledge during the search process. The affective experience of uncertainty found to be high at the beginning of the process, actually increased as the search progressed before decreasing after considerable formulation had taken place and then turned to feelings of confidence as well as increased interest.

The concept that affect influences the process of information seeking, however, was noticeably absent from the literature of information science and rarely

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mentioned in library literature. A colleague of mine called my attention to an article by T.D. Wilson [1] discussing three types of information needs, affective needs being one of them. This article was a seminal piece for me as it confirmed the importance of consideration of affect in information seeking by a major scholar in the field.

In addition and more important, Wilson is one of the few information science researchers who has emphasised the concepts of meaning and understanding within a constructivist approach to information seeking and use. His views of the user's model of the world as a context for the construction of meaning have brought considerable insight to the constructivist approach and contributed to the development of my framework [2].

His recent research investigating uncertainty in information seeking is in line with the work that I have been doing during the past few years. Uncertainty, long considered a central concept for information science yet understudied for the most part, is emerging as important for understanding the users' perspective of information seeking and use. Many thanks are due to Tom Wilson for the sustained contribution he has made to the literature of library and information science in furthering our understanding of the user's perspective.

Carol C. Kuhlthau

INTRODUCTION

Information workers consider information seeking as a necessary, but preliminary activity, to the more significant endeavour of using information for constructing new knowledge to accomplish the tasks and goals that encompass their work. For the most part, however, information systems and services have been designed to support information seeking and gathering without consideration for accommodating the ultimate need of applying information to accomplish work tasks. Even in those instances where systems have been specifically designed to personalise information provision only limited success has been achieved in improving the quality and efficiency of workers' productivity. Over a decade of efforts to develop systems tailored to personal needs has produced little impact on the ability of information workers to accomplish the more creative aspects of their work [3]. Personalised systems often miss the mark by overlooking the very information that contributes to and supports the creation of new knowledge for addressing the more difficult emerging problems of the information worker. User profiling, as a way of personalising information provision, has been most effective in supporting routine tasks and monitoring but less effective in the more complex tasks involving creativity and construction. For the most part, systems have not been successful in identifying information beyond the obvious and conventional. Library and information services, as well, have been more successful in meeting routine information needs than those related to the creative process involved in the more complex work tasks [4]. Most systems and services have been inadequate for supporting the information search process that enables workers to create individualised approaches that add value to an enterprise. To date, system design research seems insufficient for revealing the process of information use underlying the more complex tasks of information workers. This paper reports on an

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exploratory study in an ongoing series of studies that strives to gain a better understanding of the information search process of information workers in accomplishing the more complex tasks that comprise their work.

REVIEW OF RELATED RESEARCH

Research into the process of information seeking for adding value to an enterprise has yet to make significant impact on standard system design. There is, however, some important work being done by a number of information science researchers that enhances understanding of the information-seeking process and that has potential for improving the design of information systems and services for accommodating a broader range of the information needs of workers in information dependent environments. Task complexity is emerging as an important, influential factor in information-seeking behaviour in work situations [5–7]. More complex tasks are nonroutine, unanalysable, involve processing equivocal information and evoke different approaches to information seeking than do tasks that are routine, analysable, and involve less equivocal information [5].

The cognitive approach to information seeking is now well established as a way of studying information users to gain an understanding of their thinking processes in information seeking [8]. Belkin, Brooks and Oddy's [9] anomalous state of knowledge and Taylor's [10] levels of information need have become basic tenets of this approach. Other researchers have further developed the conceptual framework of this approach for application to designing systems and services [11–14].

The cognitive approach has revealed information seeking as taking place over time and involving different states of knowledge. The Information Search Process (ISP) model falls within the cognitive approach and addresses complex tasks that require information seeking, gathering, interpreting and use over an extended period of time [15]. This model, adding an affective dimension, presents information seeking as a process of construction with uncertainty decreasing as understanding increases [16], incorporating the cognitive with the affective experience common in the process of information seeking and use. The six stages of the ISP are: initiation, when a person becomes aware of a lack knowledge or understanding and uncertainty and apprehension are common; selection, when a general area or topic is identified, and initial uncertainty often gives way to a brief sense of optimism and a readiness to begin the search; exploration, when inconsistent, incompatible information is encountered, and uncertainty, confusion, and doubt frequently increase; formulation, when a focused perspective of the problem is formed, and uncertainty diminishes as confidence begins to increase; collection, when information pertinent to the focused problem is gathered, and uncertainty subsides as interest and involvement in the project deepen; presentation, when the search is completed with a new understanding of the problem, enabling the user to explain his or her learning to others [14].

When information seeking is viewed as a process of construction, an information system and service are needed that go beyond provision for seeking and gathering to support interpretation and use. Researchers with a broad view of information seeking are calling for alternative approaches, such as Bates' [17]

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'berry picking concept' and Erdelez' [18] 'information encountering'. That research emphasises the user's perspective of the process of information seeking. In the same vein, Vakkari's recent study explores the concept of focus in the process of information seeking [19]. Research is also showing that uncertainty is viewed not as something merely to be reduced but as indicative of the engagement of the user in a complex problem that requires time for construction [20–22]. Alternative approaches to classification are also called for, as revealed in Kwasnik's study of personalised organisation systems [23]. Taken together this research opens up an area of work that holds the prospect of improving the design of information systems and services for accommodating complex tasks. However, many questions remain related to the user's perspective of information seeking in the process of accomplishing complex tasks.

STUDY DESIGN

The study reported in this paper is part of a programme of ongoing research based on the model of the ISP developed in a series of studies by Kuhlthau primarily with novice information users [14]. This phase of the research concentrates on investigating information workers' perceptions of the process of information seeking and use for accomplishing complex tasks. The research seeks to investigate the ISP in the workplace and to explore the use of sources, systems and services in the tasks workers are striving to accomplish.

This research into the ISP of information workers started with a preliminary longitudinal case study of a securities analyst, as a type of information worker, comparing his perceptions of information seeking and use over a five-year period from the time he began as a novice to when he was being ranked as an expert by peers within the industry. The study investigated Baldwin and Rice's finding that experience was the only individual characteristic to influence an analyst's effectiveness in his or her work [24]. The basic purpose of the initial case study was to explore the worker's perception of information seeking, particularly related to the experience of uncertainty, task complexity, construction of knowledge and use of sources and to study the difference that expertise made in these perceptions. Findings indicated that an increased understanding of more complex tasks was a critical factor in this worker's information-seeking behaviour. Although he clearly identified some tasks as complex, requiring considerable construction at each point in his career, as an expert he identified a different objective for the information seeking and use associated with these tasks than he had earlier in his career. As a novice, his emphasis was on getting the 'right' conclusion. As an expert, he emphasised interpreting and constructing for the purpose of 'adding value to the client's knowledge'. This finding raised questions about the information-seeking behaviour of experts within the more complex tasks involved in their work. How do experts use information to accomplish complex tasks? What role do information systems and services have in this process?

In the study reported in this paper, we continued to investigate people in information intensive work who are early in their careers, concentrating, however, on those having sufficient experience to be considered experts, or approaching a high degree of expertise. The framework for this study was drawn from Kuhlthau's

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earlier research into the ISP of novice users and from the longitudinal case study of the early career information worker's perception of information seeking, particularly the findings related to expertise in addressing complex tasks [25]. The underlying assumption was that information seeking within complex tasks encompasses a constructive process that goes beyond simply striving to reduce uncertainty and to find a right answer, and includes interpreting, learning and creating to accomplish the task by adding value to the enterprise. This exploratory study involved lawyers as a particular group of information workers and sought to gain a better understanding of the variety of tasks in which they were involved and how they used information to accomplish these tasks. In addition, the study investigated the role mediators played in the process of the information use of this group and explored what sources, systems and services would be helpful.

The study addressed the following research questions: does this group of early career expert information workers differentiate between routine and complex tasks? Are tasks that are identified as complex related to the construction of new knowledge? Is uncertainty related to more complex tasks? How are sources, systems and services used in complex tasks? What are the roles of mediators in the process of information seeking and use of this group? What potential roles for mediators are identified by this group?

Structured interviews were conducted with eight practising lawyers, four male and four female, identified as early career experts with six to ten years' experience in their areas of practice. They practised in New Jersey in small to medium law firms specialising in a variety of types of cases including complex toxic tort, personal injury, contract disputes, criminal matters, environmental cases, real estate matters and landlord-tenant disputes. One lawyer functioned in a dual role as an instructor/co-ordinator of a law school clinic representing homeless persons and welfare cases.

Each of the participants was interviewed in taped sessions of approximately one hour. The lawyers were interviewed individually and not as a group. Each author of this paper conducted interviews, either separately or together. The interviews were semi-structured. Eight questions were prompts to initiate discussion. Additional questions were posed to elicit elaboration or examples. The prompt questions were as follows:

1. Describe your work, specifically the tasks and goals in your work.
2. How do you use information? How do you get information?
3. Do you use a library? A database? Other sources?
4. Are some tasks more complex than others? How do you find and use information in different level tasks?
5. Describe the stages of a task and the information use in each – beginning, middle and end.
6. What is most the difficult part? What is most the creative part?
7. How do you know when you have enough information?
8. What sources, systems, and services might be helpful to you?

Tapes of the interview sessions were analysed according to the framework that had emerged in the longitudinal case study conducted by Kuhlthau earlier [14]. Evidence was sought for perception of construction in relation to complex tasks;

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perceptions of use of information sources in accomplishing complex tasks; problems experienced related to information seeking within complex tasks; and current and prospective roles of mediators. The research questions presented above guided data analysis.

FINDINGS

Task complexity related to construction

This group of lawyers readily explained that their work comprised both routine and complex tasks. Complex tasks involved preparing a case for trial and were described as being accomplished in stages 'moving from fact gathering, to defining the theory of a case, to resolving the matter through trial'. Matters that were settled out of court and did not require extensive pretrial or trial preparation or were otherwise resolved without full formal court proceedings were generally considered of a more routine nature.

The lawyers described complex tasks as those involving considerable thinking and formulation using terms indicating the need for considerable construction of a new approach, one that was not readily apparent on the surface or at first glance but needed to be worked out over time. They described 'figuring out a strategy for a complex case' or 'looking at a tendency to decide what to do in a case'. One lawyer described the task as 'a puzzle to unravel'. Another explained that the interesting part is when you 'go to the next level'. One of the lawyers further explained that:

The hardest part of the job is figuring out a strategy for a complex case and figuring out what path to take. ... What you are trying to prove in order to succeed takes analytical skill. Trying to predict the future a bit. Trying to figure out how it is going to play before a jury. You should have in your mind what your closing statement is going to be before you start trying it.

Some descriptions of a complex task were more in the 'puzzle piece' mode, of filling a slot, but there was considerable indication of unspecified information need at the beginning of the process. A lawyer explained it this way: 'You have an idea in your mind of what you are going to find out. You know there is a slot that needs to be filled and you know the name of that slot but you don't know what goes into it'.

Complex tasks required formulating new approaches and creating different ways of looking at the evidence in a case. For example, one lawyer who practised in an area that usually settled out of court described encountering a situation where a case would need to be tried and explained the different approach required in this way:

There are certain legal issues that we haven't even thought that much about because we really haven't gone that far into the case. Wow, when you sit down and think about how are you going to prove that, there is not only one answer. You are looking at it in a certain way. What is the strategy for this trial? It may sound unorthodox, but there is more than

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one way to do it. It's not black and white. You can be very creative in how you present your case.

In explaining more complex tasks, these lawyers described considerable construction related to accomplishing their objectives. They emphasised that there is not just one way to develop a case but different ways to approach the information, facts and evidence that are not readily apparent on the surface. Constructing a strategy entails considerable creativity and formulation on the part of the individual. Complex tasks involve developing one's own theory of a case and constructing a way to present the information as an interesting and persuasive argument.

PRESENCE OF UNCERTAINTY RELATED TO CONSTRUCTION

This group of experts acknowledged a sense of uncertainty as they sought to create new approaches or to construct a strategy. As one lawyer noted, 'At first you are unsure and worried and then you are confident'. They exhibited affective experiences similar to those described in the model of the ISP, moving from uncertainty to confidence.

However, these experts did not respond to uncertainty in the same way as the novices in previous studies had. The novices interpreted their sense of uncertainty as indicating that something was going wrong, either with the task or with their ability to proceed effectively with it. But none of these experts expressed the feelings of anxiety and frustration related to uncertainty that the novices experienced [3]. On the contrary, these experts expressed heightened interest and enthusiasm for more complex tasks that required considerable construction and creativity. Many of the lawyers actually related the sense of fun to more complex tasks that led to innovation and construction. To describe their feelings about the more challenging parts of their work, the lawyers used terms such as interesting, imaginative, exciting, fascinating, as well as fun with one noting that sometimes you 'fall in love with your case'. This kind of engagement with the more difficult complex tasks was pervasive and consistent among these lawyers. As one stated, 'That is the part that gets my adrenaline running and I feel really excited about it. The routine is just not as much fun'. This finding indicates that these experts had learned from their past experience that uncertainty is to be expected in complex tasks where considerable construction is required.

USE OF SOURCES IN COMPLEX TASKS FOR CONSTRUCTION

These lawyers used sources of information in different ways throughout the process of construction within a complex task. Initially, sources provided an overview and background knowledge. Then, sources enabled them to construct a theory or strategy in the case. Finally, they completed their work when they determined they had used sufficient information to create a persuasive presentation in court.

Several lawyers noted that more complex tasks occasionally require sources outside legal literature, for example, to address questions related to medical, environmental or social issues. One lawyer described using such sources 'to get general knowledge'. Another explained that:

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Every now and then something comes my way that is not directly in my zone of expertise. So I come to the university library and look up material not necessarily legal in nature.

Legal reference sources were used to construct a theory and develop a strategy. All eight lawyers expressed a preference for print texts over computer databases for more complex tasks. Although there was the expectation that computer sources would or should make their work easier, and they considered themselves 'old fashioned' for their preference for using books, the print sources seemed to support their work of constructing a complex case.

One lawyer described in detail his process of constructing a case using printed texts:

When I do my research for a motion or a brief, what I found all the time is, I usually sit down and try to formulate what I think is the issue. After I totally understand what the facts are, I write down a couple of areas that I am interested in researching, that I think will answer the question I am trying to get to. I know that other people looking at the situation will come up with different areas. But I usually try to hit what I think is the key area and then I start to do my research. And, I do my research the old fashioned way. I go into the library and I pull out the index and I start reviewing the keywords and I find that it takes a long time.

This lawyer expected to develop different ideas from someone else looking at the case and anticipated that it would take some time finding, through experience, that there is a pattern in his work that at first seemed random. However, the consistency of finding information in printed text that he was not specifically looking for led to new understanding and formulation. As he explained:

I find usually while I am looking for my issue I come across something else apparently haphazardly. But it has happened so many times that it isn't haphazard and I usually end up finding the case that way. I start looking for A, and while looking for A, I find B. Then A isn't the issue I am looking for. Now it's B. I have found something that really starts to formulate the issue I am looking for. It has happened so many times that I am convinced that there is something else going on there.

Another lawyer reflected that it is all done 'by hand' and went on to explain that:

In every case that I have ever researched I have done this. I can sit here and visualize going through summary cases. I don't really see what I am looking for and then the next one after it catches my eye and I keep going. And finally, so far I have never missed, I find the seminal case that turns the key one way or another. I go in not knowing what the case is but finding it. And once I get there, I do the research on it.

The other lawyers in the study verified that the process of constructing new understanding in a complex case was better accommodated in the printed text than in the computerised version. As one explained:

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There is something I would miss if I did it the way [the system] would have you research, which is to plug in the phrase and have it pop up every case that says 'George'. Well, I can tell you, I have looked for 'George' a lot of times and I have found 'Kevin', and that's the key. I would never find it using the traditional search program they have now. So when I do research, I don't usually use [the system] now. In light of my experience, I go with the book. I go to the library and I sit down and I take some time. I peruse the digest summaries of cases under the keyword index. I read the case and I disregard and I Shepardize and see if any cases fall in line that look interesting. And, ultimately, I find what I am looking for. But I do it in such a way that I would never get there using the computer. And that's why, even today, [the system] doesn't help me to get where I want to go.

The existing computer system required these lawyers to be too specific rather than opening up a broad range of options and did not seem to allow them to look at a large enough variety of information at one time. As one explained:

I don't personally like using search programs. You have to be specific. You have to know the name of the defendant or the name of the case.

Another stated:

I like the book. I'm a little old fashioned that way. I like to see the hard book. I find that computer services aren't as user friendly. I can just look in one [supplement] and a short little blurb and the screen doesn't do that for me. I can't get an overview.

Their process of construction required sources that were structured to enable extensive exploration. Another lawyer described the difference between using printed texts and computer databases:

There is something about physically having those books and being able to look at it and to have a couple of them opened on your lap and to be able to kind of cross reference all at the same time. I need to do that. I need to physically see it. And when I put the queries into the computer, it seems like the right answers don't come back to me quick enough and I am very easily frustrated.

This lawyer further explained how the printed text accommodated the constructive process:

You can have a bunch of digests open at the same time and you can rule out some things. It's almost like a doctor or a mechanic – you're looking at everything together. With the computer, I find that I almost have to remain isolated with my searches. It is very easy for me to lose track of my train of thought and I would have to go back or see where I was. Whereas, when I take the books out, albeit I can make a huge mess of the library, I can kind of see where I am and how I got there.

These lawyers had a clear sense of when they had used sufficient sources to complete their tasks. In response to the question, when do you know you have

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enough information, they consistently described a definite sense of closure. One lawyer stated that 'you have enough when you put yourself in place of the juror and figure out any real pitfalls and how to address them'. Another described enough as, 'When I have answered all the questions to defeat their argument'. Another added:

You can tell when you are formulating your argument what the strong points are and what the weak points are. Try to tie everything down and to anticipate other issues. I am done when I have responded to every issue that is relevant and there are no loose ends.

Determining when they had used enough sources was related to their sense of having constructed a persuasive strategy. As one explained: 'Is there sufficient information to meet the burden of proof? ... You not only want to have the information but you want it to be persuasive'.

The constructive process closed with preparing to present a case in court. At this point, the lawyers acknowledged that they were engaged in an intensely creative process. The use of sources supported this process. They commented that: 'Putting it together is the most creative part'. 'Your own creative juices go into formulating those arguments'.

There were a number of other sources used by lawyers in addition to the formal legal references discussed above. At times, these sources supported the constructive process. Three categories of sources were identified in the study as internal office files, external electronic resources, and people both internal and external. These sources provided relevant factual and legal information that lawyers consulted and used in the course of accomplishing complex tasks.

SOURCES IDENTIFIED AS MOST HELPFUL AND LEAST HELPFUL

Helpful and non-helpful legal reference sources have already been discussed above, i.e. from the perspective of these participants print sources accommodated the construction process better than the computerised sources. With the other non-legal sources, these lawyers expressed problems with organisation, classification and access. The internal office files consisted of three types of information, specifically, files maintained of cases in progress, files maintained of completed cases, and files maintained of general information related to the lawyer's area or areas of practice.

One of the primary needs for keeping information was to follow the progression of the cases currently being worked on. Information gathered in each individual case was maintained in paper form in expandable files and, in addition, many lawyers required their secretaries and paralegals to develop a computerised system to keep summary information on each ongoing case. As one lawyer explained:

Every case in the office is in the system with a docket number, file number, list of attorneys on the case and a section where you can put in notes. So, if I need a file number on a case or a phone number I can go into my database and get that information. ... The secretaries put it into the system.

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So, without getting hard copy of a file, I can know what is going on with a file.

However, in instances where a paralegal had set up a computerised file system, the lawyers complained that it was difficult to find things in it. One lawyer stated:

The paralegal is assigned a case and they come up with their own way of naming it ... there is no way for me to go into a computer to pull out what she knows. They know where it is but you don't.

Without some kind of uniform controlled vocabulary, even this straightforward current information was difficult to retrieve.

Another primary need for keeping information was to retain portions of files from completed cases that could be referred to at a later time when addressing a similar matter. All of these lawyers had set up some system to keep important information pertaining to prior cases that they expected to need some time in the future. One lawyer described the critical need for this information and the difficulty of managing these files:

Once we collect this information, we save it. We don't throw it away. We try to put it in some format that we can bring back in the future when we do have new cases that come in ... the unique aspect of the work that I do is that the litigation goes back thirty or forty years and stays the same for the most part. In fact, it gets harder to prove as time goes by unless you save the information. ... We have folders and folders of old depositions and we use them time and time again. We have a whole library of old deposition transcripts and a library full of documents collected on products. Anything we have ever done, we save. What we are thinking about doing now is putting it all on disc because the space is so incredible.

All expressed a need for a uniform system or software to organise these files. Several lawyers used the term ‘pack rats’ to describe this collecting activity that was considered crucial to the success of their practice. As one lawyer explained:

We are always collecting information. Every file is important and we have to maintain the information in some form. If we lose it, it may mean losing a motion a year from now because we can't find the information.

A critical problem identified was the difficulty of organising this information for future access – ‘Our problem is to come up with a uniform way to save and keep it manageable ... so that everyone has access and everyone knows where it is at any given time.’

Another primary need for keeping information was the collection of general information related to the lawyer's area or areas of practice. These were personal files of miscellaneous legal and non-legal information that the lawyers thought might be of use in the future. However, these lawyers found it difficult to organise this information for easy access. One lawyer explained the disarray of this type of information in this way:

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It is about three large stacks of paper that definitely needs to be organized. Because when I look for things it takes longer and longer to find them now. If I see a good brief or a good article that I think might be helpful in the future I will save it and keep it in a file. So most of it is hard copy paper in my office. We have a limited brief bank on the computer but that is limited.

The lawyers expressed a desire to have these files computerised to improve access.

External electronic sources primarily consisted of email, listservs and the Internet. At the time of this study there was relatively limited use of these electronic sources, although there was initial use by several of the lawyers and the expectation of more extensive use in the near future by all of the lawyers.

Only one lawyer mentioned extensive use of email for information related to the area of practice. This lawyer described less effective use of email as time progressed rather than finding this resource increasingly helpful because of the volume of undifferentiated messages. The problem was stated in this way:

They have us hooked up to email now and we get bombarded with information on welfare law. ... So, every day I go into my email and there can be nine or ten new pieces of information with respect to those changes. I think that is too much. I can't read it all. ... My time is very limited and I have to keep myself megaorganised. I don't have time to browse through nine or ten extensive, complicated emails on a daily basis. That can take me an hour. ... This is fairly new. I would say a year ago, before people were so email literate, I would get maybe one a day. That I could handle. I could pop in and see if it was something I needed. It was a manageable amount of stuff. Now it's not manageable. I don't know that I need that level of detail on a daily basis. Every minute change to the law. I don't have time to look at it. I think what happens is, I miss the big stuff. I'd rather have three big things than ten minutiae. But that is what is being sent to us.

The lawyer felt overwhelmed by the amount of unorganised information and was concerned about missing the more important information. This lawyer's comments draw attention to the fact that unfiltered email may compound the problem of accessing pertinent information by overwhelming the user with messages.

Another external electronic resource was listservs that were also seldom used. However, one lawyer described effective use of a listserv in this way:

I'm on a list with the agency and when there are changes to the regulations or there are internal agency instructions, which are the ways they interpret the law and how they are put into practice, they send those to us on a regular basis. I have [an assistant] update my regulations at the beginning of each semester. The system is easier now that we are using computers. We used to use the administrative code with tissue thin paper and a horrible system and you would have to go and try to figure out what had changed. Now it comes off the computer.

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In contrast with the ineffectiveness of email, the listserv was considered an effective source of external information. The difference seemed to lie in the fact that information was organised and filtered by an assistant rather than being received directly by the lawyer on a daily basis. Another external electronic resource was the Internet, which the lawyers viewed as having considerable potential for the future, but not one they were using to any extent at the time of the study. Their expectation was that the Internet would be most useful for accessing general information rather than legal sources. They specifically mentioned its use for locating people, such as those serving as witnesses and experts. One lawyer emphasised the potential for locating websites for general information, for example medical resources. Another prospective use of the Internet that they identified was access to libraries. As one lawyer noted: 'I think there are ways to get to other libraries on the Internet, medical libraries for example. ... It would save a lot of time'. Although use of the Internet was limited, there seemed to be an emerging potential for considerable use.

The third category of sources identified by the lawyer was people, specifically, fact witnesses, experts and colleagues. Fact witnesses provided descriptions and accounts of what had occurred that led to the litigation. Experts educated the lawyers in areas with which they were unfamiliar. Colleagues were consistently mentioned as an important source of information. One explained that:

Lawyers may be adversaries but they are also colleagues. So we get information from each other. I know some of the attorneys involved in [a similar] case that is currently being tried and I asked them if they would send me their bench memos on certain legal issues. So in this way I can see what was their take on the issue.

Another described:

There is no sense in reinventing the wheel. You can get answers from someone who has done exactly the same brief on the same issue with different parties and you can get information from them and update any research they have done. That is always helpful.

Another commented: 'In a more complex matter, I would look to another attorney and dedicate a large amount of my own time to do that'.

In summary, these lawyers used internal office files, external electronic resources and people as basic sources of information beyond the formal legal resources. They clearly identified a need for some kind of uniform classification to organise their internal files for tracking the progress of current cases, as well as for keeping files of completed cases for future reference and for keeping general information related to their areas of practice. The problem of access seemed to be pervasive whether the files were kept in paper copy or in computer databases.

External electronic sources were just beginning to be used by these lawyers. Those who were using email, listservs and the Internet were finding that some kind of filtering was needed to avoid the counterproductivity of being inundated with an overwhelming amount of diverse messages and random information.

Finally, witnesses, colleagues and experts were important sources of information. All of these sources were used in the process of construction in accomplish-

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ing complex tasks. Some sources were more helpful than others. While these lawyers required the opportunity to explore a wide range of information, they experienced difficulty with the current state of organisation and access available to them.

ROLE AND POTENTIAL ROLES OF MEDIATORS

All of these lawyers used some type of assistance in information seeking and use to accomplish their work. Assistants were identified as secretaries, paralegals, one used a research assistant, and a few mentioned using a librarian. The assistance consisted of basic organisation and access to information. However, they noted serious limitations in their current assistance and identified significant potential roles for mediators.

In many instances, the lawyers hoped or expected that computer systems would be developed that would assist them in their information seeking and use and better accommodate their work. But at this point they expressed some disappointment and reservation about the application of current systems for meeting their information needs, particularly in more complex tasks. One lawyer described his reservation in using computer systems for legal research:

For my own personal work, I don't know. I am sure that at some point there has to be a way to make legal research easier as opposed to just punching in a keyword and having it spit out every case with that keyword. There has got to be a better way. I think the phraseology has to advance because you are looking for a particular phrase, and you don't get the phrase necessarily. You are just pulling the words out. There has got to be a better way to do research. If it ever got to that point, I would be more comfortable, but now I am not confident that I would get where I need to go the way it is set up.

The difficulty that this lawyer was experiencing seemed to be the limitation surrounding keyword searching and the lack of confidence in the system's capacity to access the range of information needed for constructing cases in preparation for trial.

This group of experts considered themselves to be 'the generation between' print orientation and computer orientation. Although they were willing to use computers, they were impatient with the continual change of emerging computer systems. As one lawyer expressed it: 'all of it changes too rapidly for me and is becoming more complicated and I don't find that helpful. I don't have time to learn a new system every two months. I'm sure that's how people make money ... but it isn't helpful to me sitting in my office'.

Another significant problem expressed was related to organising internal office files and the need for a classification system that would better serve the particular information needs of the lawyer's work. 'I know what I would like to have happen. If you could have a system where somebody comes and looks at what we have and says, here is a uniform system of data entry that you will use from now on'. However the cost and difficulty of providing this type of assistance was recognised as a major concern.

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The problem is that would be monumental because of what we use and what we do. It would be incredible and so cost prohibitive that we could never do it. But I don't know what resources are out there and who we can contact to come in to talk to us. And say, here's what we do. What can you do to make it easier for us?

The role of librarians as mediators was very limited, although there seemed to be a call for a potential role in designing and mediating information systems directed specifically to the lawyers' work. Currently, the lawyers seem to be using librarians simply for locating a specific source. As one described: 'I don't usually use a law librarian. The only time I go to a librarian is if I can't find the publication I am looking for'. Even where a librarian was engaged on a more personal level, the role of locating sources prevailed:

There is one librarian who is very helpful to everyone but especially helpful to me. I used to be a clerk so I have extra status. I ask her for books on how to take depositions and if I need a particular case and the most up-to-date decisions. I use the library about twice a month.

However, a more central potential role in the development of personalised information assistance was identified by several lawyers. This assistance would organise, classify and access information related to the lawyer's specific area of work and particularly for complex tasks.

I'll tell you that we could actually use a librarian. That's the solution! To have someone whose sole job is to make everything uniform and catalog it. So we all know where it is at any given time. Keep us ahead of the game, keeping up on the Internet so everyone can be trained. ... If we had one person who would make sure everything was in order and our computer system was set up so we could find stuff and everything was uniform. It would be more efficient.

Another lawyer described the need for a personalised information service but expressed a concern about the practicality of its development:

Because I like to draw my sources from a wide variety of disciplines. ... It would be good to have that information funneled to me. I don't know exactly what that way would be. ... If there was some way that could be designed, ... but that's so personal, so specific to what I do that I don't know if that's practical. It would really be setting up a system for me.

The potential role, was a combination of information systems and services that would be tailored to the specific tasks they needed to accomplish in their work. Although certain aspects of this mediation might be accomplished by a paralegal or other type of assistant, the lawyers suggested that other aspects would require the competencies of a library information professional.

DISCUSSION

There has been considerable discussion about designing information systems centring around 'just in time' and 'just for you' considerations. However, efforts to

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personalise systems have had limited success with users frequently expressing disappointment in the result. For the most part, these systems have been built from a systems' view of what the technology can do rather than a user's perspective of what the work requires. In most cases, users have been prototyped as a class with their roles defined according to their job descriptions. Even where users have been involved in the design plan, they are rarely brought in early enough to have significant influence on the development of basic functions. Most designers have been unable to capture the various ways that users actually accomplish the wide range of tasks that encompasses their work. Therefore most systems intended to be personalised have been built to support routine tasks and do not respond to the more complex aspects of work.

Participants in this study revealed some important characteristics about their work that warrant further study for consideration in improving personalised information systems. These lawyers identified both routine and complex tasks that required a wide range of access from simply retrieving a specific item to exploring a variety of materials in the process of constructing a theory or strategy in a case. The computerised databases of formal legal sources available to them were designed to give access to cases primarily on a limited keyword basis that worked well when they knew what they were looking for, but not well when they did not. Although these systems were not developed as personalised information systems they were designed for lawyers as a specific class of worker and to address the tasks in which they were engaged. The systems, designed to respond to specificity, were found not to serve their purposes in their more complex tasks.

These participants indicated that they needed information systems that supported the process of construction. Even in an area of work that would seem narrowly prescriptive such as law, the lawyers clearly described the need to construct personally a creative way to present a case rather than merely find 'the right answer'. As experts they agreed that people come up with different areas to emphasise when developing a case. In these instances, like the securities analyst in the earlier study, they were not looking for the one right answer or one specific case but were striving to develop a persuasive argument, similar to the analyst's goal of adding value to the client's knowledge about a stock. These lawyers concurred that this kind of work takes time and is characterised by uncertainty in the early stages. However, although they acknowledged experiencing uncertainty when they first initiated a complex task they viewed uncertainty as a signal of important creative work ahead, rather than as something gone wrong as the novices had in earlier studies of the ISP. These experts viewed the early stages of the information-seeking process of developing a case for trial not as looking for specific information but as more exploratory, seeking one thing and finding another. This seemingly haphazard process resulted in finding information that led to formulating an important issue in a case. They described a process similar to that of the ISP model.

Although these lawyers may seem surprisingly bookish, they were fairly computer literate but had become impatient with information systems that did not allow them to explore information to facilitate their constructive process. Print resources allowed them to look at many different cases at once. They could open several books to different cases and construct their argument from the various

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texts. They expressed a sense of control in 'knowing where they were' in the information sources. The print resources allowed them to look for 'one thing and find another'. The computerised system, on the other hand, was designed to be too specific to allow for the flexibility needed to facilitate construction. These lawyers expressed serious reservations about the capacity of computerised systems to access the range of information they needed. This issue relates to the classic tension between precision and recall but goes beyond to call for flexibility and control in the hands of the user.

These lawyers were the generation between exclusive use of print materials and exclusive use of databases and were open to using computer systems. However, they had found the systems hard to use particularly for their more complex tasks. They were willing to use databases when the systems met their needs, particularly when they were looking for a specific case that they already knew about. However, when their state of knowledge was more ambiguous and ill-defined they found the databases less useful. Databases worked well for routine tasks and specific inquiries but not so well for complex tasks and unspecified queries. Considerable rethinking is needed to redesign systems to provide a wider range of access that is more in line with the process of construction.

In addition, these lawyers were having great difficulty managing their internal office files. They or their assistants had attempted to develop classification systems, but access to these files, that were considered critical to the success of their work, was not efficient or effective. Considerable rethinking is needed to adapt principles of classification to offer uniform, yet personalised, systems of organisation with more predictable, yet flexible, access. More research is needed in line with Kwasnik's work on personal organisation and classification systems [23].

The lawyers' initial experience with external electronic resources was not proving to be as productive as they had anticipated. They were finding that electronic resources offered an overwhelming amount of information and expressed a need for direction and filtering to enable them to use the sources for their work. They needed multilayered information systems to provide a range of functions including organising office files, searching the Internet and handling email, and supporting the construction of a case for trial.

Potential for developing personalised services to improve the information seeking and use of these workers is indicated in this study. For the most part the computer systems currently available had been developed without sufficient research into how these users actually accomplish their work. The crux of the issue seems to centre on routine versus complex tasks.

This exploratory study indicates the need for further research into at least three aspects of information use related to accomplishing work tasks. The first is the way information is presented to the user. In order to develop a complex case, the lawyers called for an array of cases to be presented simultaneously rather than the sequence of single cases that the information system was providing. Simultaneous review of an array of information seemed to accommodate the constructive process in which the participants were engaged. Second is the limitation of keyword searching. The lawyers seemed to require the opportunity to locate information outside the keyword range in order to spark an idea that enabled them to formulate the issues in a case. Keyword searching did not allow them to 'find

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Kevin while looking for George'. The capacity to present information outside a traditional relevancy approach seemed to be needed to allow for individual creativity in developing a case. Third, these participants wanted a sense of control in doing legal research and seemed to become 'lost' in the computerised information. A sense of where one is in a system seemed to be desired in order to have a sense of control in using information for developing a complex case.

The participants in this exploratory study indicated the need for 'just for me' information systems and services. 'Just for me' incorporates 'just in time' and 'just for you' concepts but goes beyond to provide personal information mediation. 'Just for me' services and systems would be grounded in a clear understanding of an individual's work, the different types of information needed and the range of access required to accomplish a variety of tasks. Although these lawyers expressed a substantial need for a service designed 'just for me' they did not think such a service was practical or even possible. However, when we examine what they were indicating would improve the information provision for their work, there are some basic needs that may be accommodated by applying a user-centred approach to the design of systems and provision of services tailored to personal information needs. Further research is needed to develop the conceptual framework for 'just for me' systems and services that enable information workers to accomplish complex tasks that require interpreting, learning and creating.

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