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Perceptions of Affordance in an Academic Library: A Qualitative Study

Abstract: Applies ecological psychology's concept of "affordance" to graduate students' information behaviours given design decisions made by academic librarians. Qualitative interviews explore how students perceive and use the library's various tools (e.g., books, databases, instructional sessions, librarians, etc.), and how students' activities reflect librarians' perceptions of what these tools can do.

Résumé : Application du concept de psychologie écologique de « l'affordance » sur les comportements informationnels des étudiants de 2e cycle concernant les décisions de conception prises par les bibliothécaires universitaires. Des entrevues qualitatives explorent la manière dont les étudiants perçoivent et utilisent divers outils de la bibliothèque (par exemple : les livres, les base de données, les sessions de formation, les bibliothécaires, etc.) et la manière dont les activités des étudiants reflètent les perceptions des bibliothécaires sur ce que ces outils peuvent faire.

1. Introduction

Graduate students on university campuses have a range of information needs and use many information sources to meet those needs. In library and information studies, Mellon (1986), Leckie & Fullerton (1999), Given (2002a; 2002b), Saumure & Given (2004), Kuhlthau (2004), and others have explored students' experiences, from preschool through graduate life. The retrieval of relevant documents, the creation of complete and appropriate bibliographies, and other aspects of student behaviour that lead to academic success have been central areas of study for decades (see, for example, Vakkari & Serola 2002). The academic library also plays an important role in this context, as it is a central hub for students to access online materials, personal help, and other information resources. Research on graduate students' interactions with the academic library examines the use of e-journals (e.g., Liew, Foo and Chennupati 2000), other web-based resources (e.g., Gullikson et al. 1999; Aiken et al. 2003), and how well library collections meet students' needs (e.g., Smith 2003). However, few studies examine the holistic role of the library – where systems and users interact within a broader social frame. Although digital resources play key roles in students' academic lives, focusing on these to the exclusion of other areas of interaction risks overlooking significant parts of the library experience. In this study, students' information behaviours are examined in light of theory from ecological psychology, with a particular focus on the role affordances play in shaping students' informational activities.

2. An Ecological View

Bonnie Nardi and Vicki O'Day (1999) propose an ecological model for examining library use. In *Information Ecologies*, they critique the "rhetoric of inevitability" that is often used to discuss technological change, which frames it as uncontrollable and destined. This view, they argue, makes users feel powerless to influence technology, or to choose

which technological changes they want. Nardi and O'Day's ecological model views technology not merely in terms of new features, but as a catalyst in a complex and ever-changing ecosystem. The introduction of e-journals, for example, changes much more than the way we look at journals; it also changes which journals users select, how often they visit the library, and the kinds of questions they ask at the reference desk. Similarly, Kirsty Williamson (1998) has formulated an ecological model of information use. In examining the information behaviours of elderly people, she found that much of the information gathering people do is spur-of-the-moment, or even accidental. Williamson's ecological model focuses on the individual "in a particular physical, social and cultural environment," with the understanding that information behaviour must be understood in context or not at all (Williamson 1998, 25). Although the scope of behaviours in Williamson's study extends beyond information retrieval, the central role this plays in her theories coincides with literature on relevance (e.g., Park 1993). By adopting an holistic view of libraries researchers and librarians can better decide what kinds of technological change are required, and better recognize the effects of technology on the broader library environment.

3. Ecological Psychology as a Theoretical Framework

In psychology, the idea that an individual's behaviour cannot be studied in isolation from that user's environment was foregrounded by James Gibson, the principle founder of a school of thought known as "ecological psychology". Here, the 'world' consists only of those things perceived by an organism in its environment; for example, time is constructed not as a linear measure of centuries and eras, but as the passing of events directly perceived by an organism (Gibson 1979, 12). On paper we measure time numerically, but in our lives it is more likely to resemble personal and often deeply contextual measurements such as "soon after my grandfather died," or "right before I graduated from university".

Central to Gibson's view of the world is the concept of affordance, or the opportunities for action offered by the real world. A reptile in a desert might perceive a large rock as a place to sunbathe or a place to hide; a human might perceive the same rock as a weapon or a building material. There is no 'correct' use for the rock, only the affordances perceived by various perceivers. It is this relationship between an organism and its environment that is the crux of the concept of affordance. For Gibson, "The *affordances* of the environment are what is *offers* the animal, what it *provides* or *furnishes*, either for good or ill. [An affordance] refers to both the environment and the animal [and] implies the complementarity of the animal and the environment" (Gibson 1979, 127).

In the human world, it is especially important to distinguish between an object's intended use and the affordances it offers. The intended uses of a designed object constitute only a portion of the affordances a person might perceive. One widely cited example is Geoffrey Bingham's (2000) description of a knife:

> A knife could provide an opportunity for cutting, hammering, driving a screw, chiseling, scraping, forking, reflecting light, branding, throwing a projectile, drawing a straight edge, measuring a length, picking one's teeth, cleaning one's nails, scratching a message, and so on, ad infinitum (34).

While a knife is designed for cutting, the affordances offered by the knife are not defined by the knife's designer, but by whatever person is in proximity to the knife and in relation to his/her current needs. An affordance, then, is a relationship between a person and his/her environment. A thing in the environment cannot have an affordance on its own; the affordance comes into being when an object is imbued with meaning by one who can use it for some purpose (Gibson 1979). However, this does not change the fact that the knife's designer intended for it to cut, or that a book's designer meant for it to be read rather than be used to squash bugs or press flowers (although these are affordances that book owners may perceive). The study of the differences and overlap between these uses (i.e., of how an artifact or an environment was designed to be used versus how it is actually used), are particularly relevant to studies in the library context – from the design of physical spaces to website usability.

4. Design Implications of Ecological Psychology

Donald Norman (1988) introduced the idea of affordance into the realms of graphic design and human computer interaction (HCI) in *The Psychology of Everyday Things*. Norman examined how human beings are able to interact with tens of thousands of objects, many of which are encountered only once. "When you first see something you have never seen before, how do you know what to do?" he asked. His answer: "The appearance of the device could provide the critical clues required for its proper operation" (Norman 1999, 39). Along these same lines, Kim Vicente and Jens Rasmussen (1992) proposed an approach called "Ecological Interface Design" that used much of Gibson's theory. The aim of this approach is to create systems for human-machine interaction that will not force the performer of a task to think harder than required by the task itself, that will not contribute to the difficulty of the task, and that will "support the entire range of activities" that the performer of a task might encounter (Vicente and Rasmussen 1992, 589). The aim, then, is to design systems that take advantage of human beings' innate modes of interaction with the environment without imposing additional difficulties. These principles have since been applied to software design (e.g., Ruecker 2003; Baerentsen and Trettvik 2002), analyses of work team organization (e.g., Birchall and Rada 1995), and examinations of libraries as information ecologies (e.g., Nardi and O'Day 1999). This study explores whether viewing the academic library through an ecological lens will allow librarians to better understand patrons' needs and make design decisions that fit users' established patterns of interaction in the library environment.

6. Research Questions & Study Procedures

In any designed environment, the affordances envisioned by designers and those perceived by users may differ. Library users may see opportunities never envisioned by the creators of a tool or service, or they may overlook potential opportunities that librarians perceive as available. This study set out to ask two research questions:

1. What affordances do graduate students perceive in the academic library context?
2. Do these differ from the affordances envisioned by academic librarians?

The study used qualitative interviews to examine how eight University of Alberta graduate students (aged 28 to 47) used the academic library. 'Use' was defined in the

context of library resources, including the library building itself, physical books and journals, communications with librarians, and online materials and services provided by the library system. Six participants were full-time doctoral students, and two were full-time masters students; they were enrolled in anthropology, economics, education, political science, psychology, and sociology. Six participants were male and two were female. Social science disciplines were selected as the focus of this study because it was expected that graduate students in these disciplines would make use of a wide range of library resources. In addition, three academic librarians (those responsible for designing and evaluating online and/or in-person services) were interviewed, allowing for comparisons between intended and perceived affordances within the library context.

Data were collected in the fall and winter of 2004/2005 using an in-depth, semi-structured interview style, along with task-based computer explorations. Each interview lasted approximately 90 minutes. Graduate student respondents were solicited through invitations on departmental email lists and through snowball sampling. Librarians were contacted directly with an invitation to participate. Student interviewees were selected using maximum variation sampling to achieve a broad representation of gender, age, academic discipline, and topic of study. Four doctoral students were in the process of writing their dissertations, and two were completing Ph.D. coursework. One of the masters students was writing a thesis and the other was completing first year coursework. All doctoral students had served as the primary instructor for a course (two of whom were teaching at the time of the interview), and all eight participants had worked as teaching assistants. Seven participants had worked as research assistants, although only one was doing so at the time of the study.

7. Findings: An Overview

Each affordance discussed was assigned to one of three categories, according to whether or not it was intended by the library's designers, and whether or not it was perceived by the graduate students in this study (i.e., there can be no affordance that was neither intended nor perceived). Figure 1 summarizes the most significant findings; a more thorough discussion of each category follows.

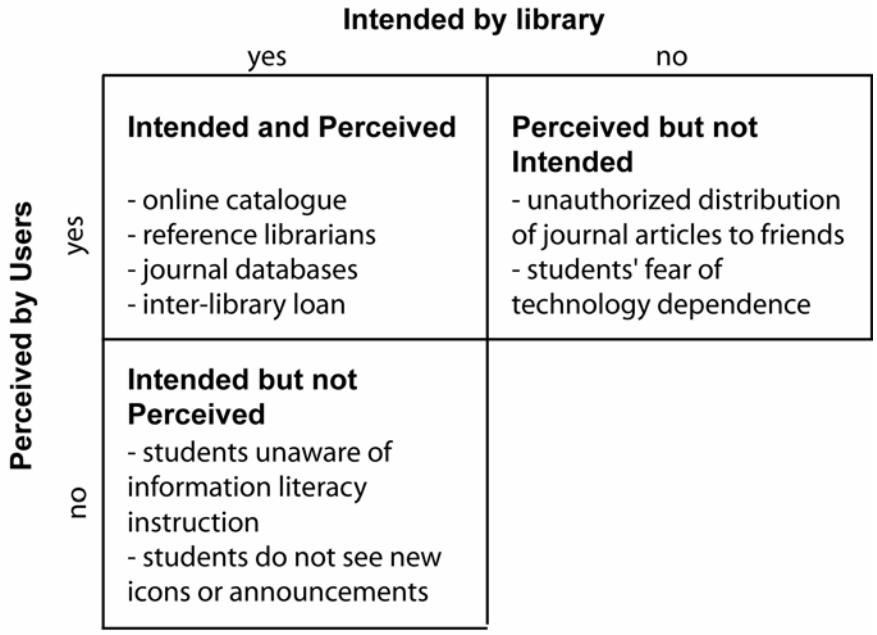

Figure 1. Summary of significant findings divided into categories of perception

Affordances perceived by users, whether anticipated by the library or not, are "true affordances" (i.e., they provide the user with some opportunity for action). Examples of true affordances that emerged in this study include finding books in the library catalogue (a use both intended by librarians and perceived by users), and using journal databases to locate articles for friends who do not have legal access to that material (a use not intended by the library, but perceived by some users).

An "affordance gap" occurs when the designers of a tool or service think they are providing an opportunity for action, but this opportunity is not perceived by the user. Examples of affordance gaps that emerged here included a lack of awareness of information literacy instruction (where librarians intend to provide useful instruction, but students are unaware of these programs), and using the Internet to announce new services (where librarians intend to provide information, but students do not see the notices).

8. Findings: Affordances That Were Both Intended and Perceived

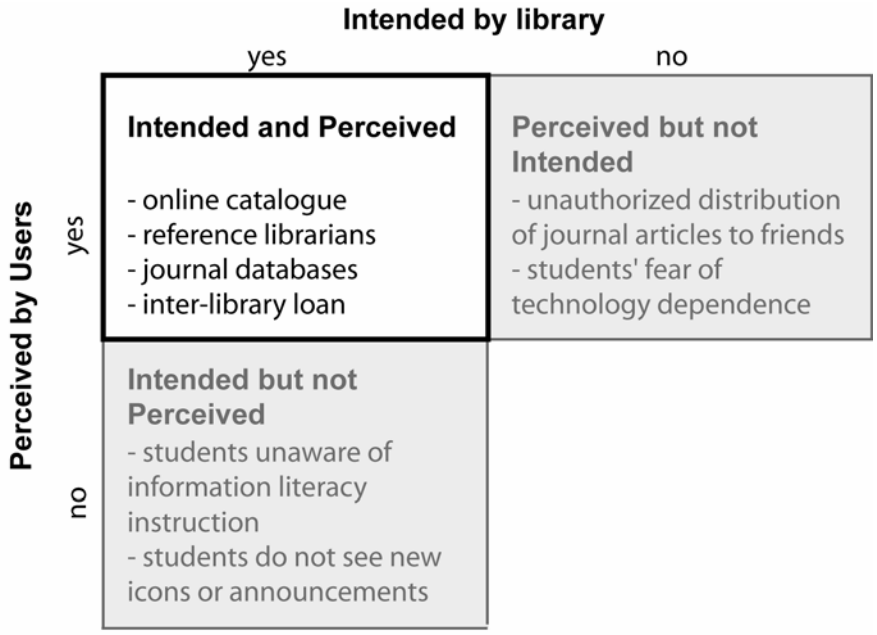

Figure 2. Affordances that were both intended by librarians and perceived by students

Graduate students in this study made use of many resources in exactly the ways that the library intended – reflecting affordances that were both intended and perceived. The catalogue was often cited as a tool students used to find information, as were journal databases, Internet connectivity in the library, guides on the library's website, and the librarians themselves. There was a high degree of satisfaction with the catalogue and other services, including being able to reserve books and use interlibrary loan. Interviewees also cited on-campus transfers of books between libraries as a popular service that saved time. Cassandra, who uses a small library in the department where she teaches, is an especially heavy user of this service. "I'm constantly bringing books in through [on-campus] interlibrary loan. I have books shipped here [to the department library]. All the books I request I just have them brought over here." She was especially pleased with the time and effort this saved her, particularly in winter, when trekking across campus could be uncomfortable and time-consuming.

Librarians as Formal Sources of Information

Although there was unanimous awareness that librarians could be valuable resources, there was some reluctance to take advantage of this service. David, a sociology Ph.D. student, said he didn't "use reference librarians very often," while Bernard (though a frequent and enthusiastic user of the library), echoed a frequently cited point of anxiety: "You're afraid to go up to the resource person and ask a dumb question". This echoes other studies that note the perception that library staff are unapproachable as a major source of anxiety for students (e.g., Mellon 1986, Van Kampen 2004).

When users consulted with librarians, however, the results were favorable. Cassandra, who is on a first name basis with the librarians in her departmental library, spoke glowingly of the many ways they help her:

> The librarians here are really helpful. In terms of if I'm looking for something specific, they're the people I would go to first…These two in particular are

really… I wouldn't even just say sympathetic. They're very proactive about the stuff that we do here.

Given her personal relationship with these librarians, Cassandra has no anxiety about approaching them; she talks to them every day, often in informal conversations when she happens to see them in the hallway, and regularly seeks their advice. Cassandra's interaction with these librarians has evolved from a formal mode of information seeking to an incidental or spur-of-the-moment information gathering activity. Other studies have shown that this approach to information gathering is preferred by most people in meeting their everyday information needs (see, for example, Williamson 1998).

9. Findings: Affordances That Are Perceived but Were Unintended

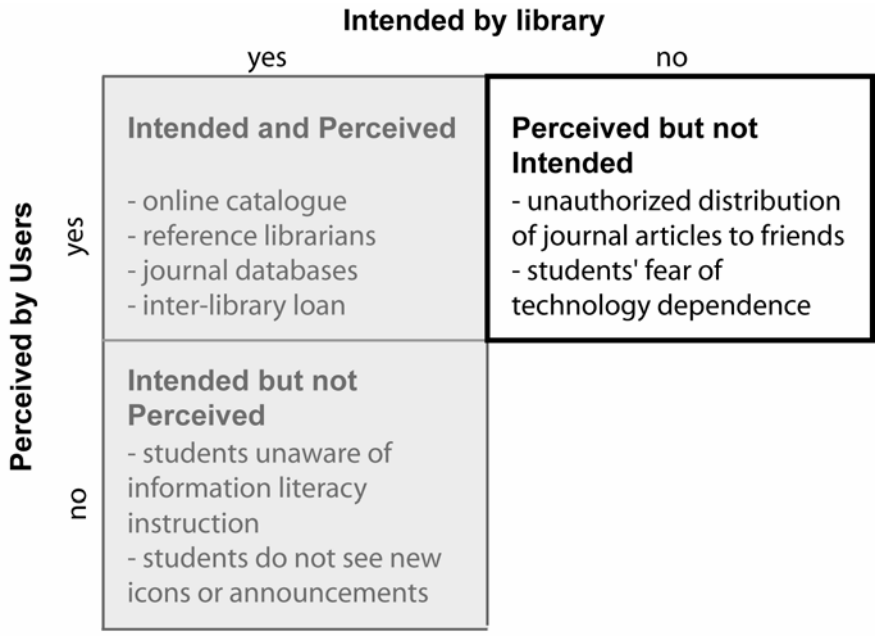

Figure 3. Affordances that were perceived by students, but not intended by librarians

A second class of affordance consists of those that are perceived by users but were never intended by a tool's designers. Nardi and O'Day (1999) provide the illustration of refrigerator magnets to describe this category; although refrigerators were designed to keep food cold, they also happened to provide a convenient place to hang decorative magnets, and with them children's drawings, photographs, and grocery lists (29). Similarly, although *Amazon.com* was designed for people to purchase books online, it is often used to locate bibliographic information in order to borrow books from the library (rather than purchasing them from the company).

Librarians as Informal Information Repositories

Although librarians are sometimes perceived by users as 'friendly', it is doubtful that librarians view their personal relationships as intentional conduits for information transfer. However, several people in this study cited friendships or informal relationships with librarians as sources of new information. In a general discussion of libraries David cited a friend who works as a librarian as a source of information:

> And then my friend was telling me about a library in San Francisco that has a tool library. This is my friend who is a librarian. She was saying you can become a member and you can borrow tools for whatever projects you're working on. That's pretty neat.

Librarians also provide information to people they are not intentionally helping. Of the graduate students interviewed in this study, Cassandra was by far the best informed about the library and its services and resources. For example, the University of Alberta had recently launched SFX's citation linking software (which they have called "Get It") into their journal database. Reference (or citation) linking software allows users to link directly from one digital citation to other information about the work cited, often including the full digital text. The software is designed to save users time and effort in tracking down digital versions of scholarly journal articles (see Caplan 2001 and Grogg 2002). Of the eight students interviewed for this study, Cassandra was one of only three students aware of this service. However, she insisted that she does not go out of her way to learn about the library; rather, she receives her information through a variety of informal channels, including casual conversations with her departmental librarian. In addition, she also learns a great deal from this librarian during presentations given at the start of each term to the classes Cassandra teaches. In describing how she knew about the Get It service and how to use it, Cassandra noted the following example of this type of information transfer:

> Deanna, the librarian, mentioned it in class when she did her orientation in the fall… The first or second week of classes I have her come in and give [my students] the overview. And I said 'Oh, that's what that is.'

It is clear from these interviews that regular informal contact with librarians increases the serendipitous information gathering described by Patrick Wilson (1977), particularly about libraries and information services. As Wilson notes, information is often "found where it is not specifically sought, as an accidental concomitant of routine activities with other purposes" (1977, 36-37); Cassandra's friendly contact with the librarians in her department seems a perfect example of this. Cassandra also expressed the effortlessness of this information transfer when asked how new instructors were expected to find out about library services. She noted: "[The librarians] would say, 'You know what? We have this service!' Because they're talking to you every day." However, given the small number of departmental libraries on campus, Cassandra's experiences are unusual. For instructors without such personal relationships with librarians, a similar type of serendipitous information gathering may not be possible.

Unsanctioned Use of Library Resources

Although most unintended affordances perceived by users are harmless or purely beneficial, some have the potential to violate established library policies. One interviewee, who spent a year doing field research in another country, found that he was able to make friends and build good will by using his remote access to the University of Alberta Libraries' journal databases to download articles for colleagues in need. He felt no qualms about this; on the contrary, he was pleased that he was able to provide help:

> There was one girl, she was doing research on Kant. And it was hard to find materials in [that country] because the libraries there are not computerized and the databases are quite limited and small, and they're much more of a hassle. And I would go to the cyber café where they had a high speed connection and go to the U of A website and download articles for her and put them on a disk and she could read them on her computer, and that was neat. That was neat to be able to do for someone else.

Although this participant's sense of helpfulness is admirable, he clearly had no conception of the legal implications of his actions. The library could face economic or legal penalties if it were discovered that this kind of behaviour was widespread. For example, many libraries sign agreements with commercial vendors that limit database access to specific users (such as an institution's students and faculty); violating such agreements could result in a loss of privileges for that institution.

Dependence on Technology

Just as some affordances can be harmful to the library, others can be harmful to users as well. In the case of information technology in libraries, some of the participants saw the many conveniences offered to them by the library as also offering a dark side. For example, some students expressed fears of becoming dependent on technology; they worried that technology would make them lazy, or that they would leave the university not knowing how to conduct research in a library with fewer digital resources. David was especially worried about this. In discussing how to find articles in a database, he said:

> I fear it's making me weaker… I've lost all my old hardened skills and I don't know how to find things… Every time you introduce a new level of software, a new level of technology, you're further disempowering people to do the work themselves, that maybe a previous generation of researchers could have done. It's a weird thing because often it's framed as empowering people to do better research, yet you're disempowering them in a way, by controlling the basic technological foundations of the research itself.

There was also a perception that increased use of technology diminishes the serendipitous information gathering associated with physically browsing materials. Bernard was especially concerned, in this case:

> In a way it was easier for me and more comfortable, and it still is, to go to the physical book or journal and photocopy it. I just like the books. [The library is] no longer a place where you physically go to get books off the shelf or to flip through journals, but it's something that is mediated, kept distant through the databases. So while often [in a database] you can go to a journal issue and see all the issues, you see them only in title. You see the title, author, and will sometimes see an abstract, if they have that function, but you can't sort of flip through the book, and say 'oh this looks interesting…' The things that stick out for you in the library are the things that you're thinking about, and it often seems to feed what you're thinking about in interesting ways. I find a computer interface doesn't.

The importance of serendipity to the library research process has been echoed frequently in studies of academic libraries. Serendipity is increasingly cited as playing an important

role in the information seeking behaviour of all kinds of scholars (e.g., Foster and Ford 2003, Delgadillo and Lynch 1999, Cobbledick 1996), and this idea has even inspired new models of information seeking behaviour (e.g., Foster 2002).

Time Sinks

Another unexpected negative affordance perceived by students was the belief that using library resources would waste precious time. Study participants universally expressed concern for their time and a constant fear of missing deadlines, which affected their attitudes towards many library services. In the case of library technology it sometimes made them afraid to try a new technological tool or service. Here, Alice explained her reluctance to click on new buttons:

> Sometimes clicking on links gets you into trouble. You never know. Computers freeze, they get hung up. If I don't know where I'm going then I'll just not… Sometimes I'm afraid to click on things…especially when your time is at a premium you're hesitant to click on something new which might waste more of your time.

This worry had not only to do with a mistrust of the technology, but also with the loss of productive time resulting from a computer malfunction. David also expressed a hesitancy to try new features on the University of Alberta Libraries' website, or even to search databases with which he was unfamiliar:

> You can sink so much time into doing searches. In a way I almost do a lot less searches now because I've wasted so much time in the past digging around. I've become conservative with my searches.

This fear of wasting time was exacerbated by the fear that he was not performing effective searches. David, although very comfortable with technology and computers, still had some concerns about his ability to search journal databases:

> I don't think I use database searches very well. It's one of those things where I tend to get advanced and then miss out on some of the basics, so either I've learned this and forgotten it or else I never really learned it.

David felt that his uncertainty about journal databases was problematic "because there could be articles coming out that I don't know about, and I'm not checking up on them. And there could be things that could be really useful for my own research and I just haven't heard about them". Interestingly, he has never taken any formal steps to address his lack of skills. He stated several times that he does not consult with reference librarians; when asked whether he had ever taken any information literacy instruction programs offered by the library, the answer was no:

> I haven't. I've taken courses on campus before though...like computing courses. So I took a course in Flash [programming language]. But not through the library.

Alice, who also had never taken library instruction courses, believed that concerns with time pressures were also keeping graduate students away from librarians and from information literacy instruction:

Alice: I know that they offer the instruction here but I don't know anyone who has taken advantage of it.
Interviewer: Why do you think that is?
Alice: I think it's too bad, really. I think probably people are very busy and very stressed out. And they don't think that taking an hour or so to [take a library session] will cut down on their research time. I think it's one of those things that gets… it's so abstract – the concept of research – that I don't know if people know that research can actually be facilitated by knowing how to orient yourself.

A lack of awareness among graduate students about information literacy instruction may also play a major role in their avoidance of it. This will be addressed specifically as one of the major affordance gaps uncovered in this study.

10. Findings: Affordance Gaps

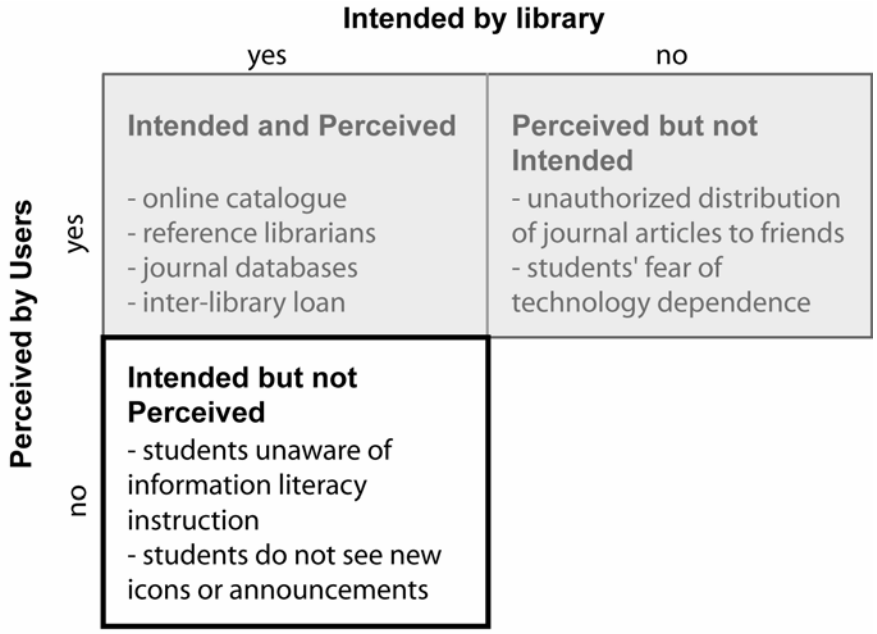

Figure 4. "Affordance Gaps": non-affordances, i.e. opportunities the librarians tried to offer, which were not perceived by students

The most problematic category is non-affordances, or "affordance gaps". This term refers to the gap in understanding created when the users of a system do not see (or understand) the opportunities for action that the designer of the system intended. As Norman notes, "Affordances specify the range of possible activities, but affordances are of little use if they are not visible to the users. Hence, the art of the designer is to ensure that the desired, relevant actions are readily perceivable (Norman 1999, 41)."

Reference Linking Software: The "Get It" Service

Although several examples of affordance gaps emerged here, one example was particularly prominent in the discussions – the Get It reference linking software. The

software works well technically, and the respondents who had used it spoke highly of it; however, many students did not know this service existed. Although the librarians on campus were excited about the new service, there were no press releases or major announcements when the service was launched. Albert (an academic librarian interviewed here) described the library's expectations this way:

> When [the system] works you don't really need to know much about it. When you see that button, click it, and then deal with the menu. My guess is that 80% of our users discovered it when they saw that button in a database they were using and wondered what it was and clicked it… It's not something you have to promote because it is in users' faces as soon as you turn it on.

Unfortunately, this was not the case for the student participants in this study. While the Get It service was popular among students who had used it, only three of the eight graduate students interviewed for this study had heard of it before participating in this study. Of these, only two had found out about it by the methods expected by the library; Cassandra learned about the service through her department librarian, while Ernst and Fred were the only participants who saw the button and clicked it to see what it would do. The other five study participants, despite daily usage of Get It enabled databases, had never clicked this button, and in one case seemed never to have seen it. David, when explicitly shown the Get It button, responded, "I've never seen it before. Is that new?" Bernard had noticed the button, but explained that he had never used it before because "Until now I thought… that it will tell me what the call number is." This button is not as self-explanatory as the librarians had hoped.

Unfortunately, those few outreach efforts that were used to promote the service omitted graduate students. In addition to adding the Get It button to the library website's interface, the librarians also placed ads in the student newspaper, put an insert into orientation materials for new undergraduate students, placed a link on the main page of the library website, and designed new information literacy instruction sessions around the service. Although some graduate students undoubtedly read the student newspaper, the orientation materials missed them entirely. One might expect that as heavy users of the library website, graduate students would notice announcements on the library's main page, but all of the students indicated that they rarely paid attention to that interface. They noted that they typically came to the library website with a task in mind and rarely deviated from that task to explore new features.

Information Literacy Instruction

By far, the most significant affordance gap discovered in this study was the difference between the ways librarians perceived information literacy instruction (ILI) and the ways it was perceived (or not perceived) by graduate students. This gap was significant given the high importance placed on ILI by librarians; when describing problems users had with understanding or using library services, the librarians in this study supposed that "Maybe we didn't get things pitched properly in the [ILI] sessions." These sessions were where librarians assumed that user education about new services was taking place. However, the students in this study placed a low importance on ILI. None of the participants had ever participated in an ILI session, and some were not aware that the library offered instruction at all (apart from orientation sessions for new students). Ernst, when shown the listing for upcoming instructional workshops, expressed confusion:

> I don't know anything about these [courses], I don't know if these cost money, or what these are. Like actual courses that they take? I don't know, I've never seen courses from the library.

Inattentional Blindness

This failure in affordance communication is not due to a lack of trying on the part of the library. The three librarians interviewed in the study were dedicated, thoughtful people who devoted energy and effort to the services they designed, which they genuinely hoped would help users. However, this study found an over-emphasis on the use of technology alone for communicating with library patrons. Again and again, the primary method of communication about library services was placing announcements on the library's website, or adding a new button to an existing service. When a button was found not to be working (i.e., when web statistics showed that no one was clicking on it), the button was changed; at one point, for example, the "Ask Us a Question" button on the main page of the library's website was changed to better reflect the nature of the service. Although this change resulted in a dramatic increase in the numbers of users accessing the service, this approach does not always work. Designers need to use many different approaches for communicating with patrons to ensure that services will be noticed and used.

One problem with relying on the library's website to communicate with users is that users often literally do not see much of the website. This is true both for pages that users never visit, and for pages they visit frequently. One example is that very few of the participants had ever seen the "upcoming instruction" portion of the library's website, even though this information is on the main page. This is partly due to the fact that this information is on the bottom portion of the screen, which often requires scrolling down the page in order to see it. However, even those users whose computer monitors were large enough to display the entire screen did not notice the "upcoming instruction" links. This phenomenon can be referred to as "inattentional blindness." Inattentional blindness refers to an inability to see things that one is not expecting, especially when one is focused on another task. When a person is paying close attention to a task, unexpected objects fail to capture attention, even when the object in question would otherwise grab their attention (Simons 2000, 147). In other words, the website of an academic library is the perfect place for users to overlook new services. Graduate students visiting the page do so with specific tasks in mind. They know where they are going (or think they do), and their attention is focused intensely on the task at hand. Ernst expressed this type of blindness:

> *Interviewer*: What about 'upcoming library instruction'? Do you ever look at that?
> *Ernst*: No, I've never seen that. Oh, look, APA style. I never even noticed it! I'll be brutally honest, I see the databases and the catalogue. That's it.

The librarians at this university also know (from focus groups and server logs), that visitors to the library's website are not exploring much outside of their favorite destinations: the databases, the catalogue, and a few other areas like "my account" and interlibrary loan. The librarians interviewed here were frustrated by users' lack of diverse usage, but did not know how else to communicate with users or promote new services.

11. Conclusion

The students interviewed in this study perceived a range of affordances in the academic library. They used many of the core tools and resources on offer (e.g., catalogue), but they also used many of these in ways that the library had not originally intended (such as downloading articles for colleagues outside of the university population). Perhaps the most interesting findings here relate to the various affordance gaps in students' lives – and it is in these areas that additional research and practical solutions might best be placed. Finding ways to enhance patrons' knowledge about instructional programs, or even the benefits of one-on-one contact with librarians, will not only raise affordance consciousness in the library environment, but will also secure librarians' place in the digital environment, as fewer and fewer patrons enter the physical library and rely on their own abilities to locate information via web-based resources.

Central to this type of evolution is the importance of building effective communication strategies between librarians and patrons. If the academic library is to ensure a high profile for existing affordances – or examine patron-defined affordances that librarians have not yet considered – academic librarians must focus their energies on promotional dialogue with faculty and students. The results of this study show that relying too heavily on one channel (such as the library's website) is ineffectual; rather, librarians need to use a variety of channels – including personal contact – to assess patrons' needs and find ways to guide patrons' information behaviours. By taking an ecological approach to the study and implementation of library tools and services, researchers and librarians can apply an holistic frame to patrons' complex information behaviours, and gain a more complete view of the role of the library in supporting academic activities.

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