DIGITAL ETHNOGRAPHY IN THE LIBRARY

In the Library Series

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INTRODUCTION

Libraries are portals to information, providing user access to tools for the creation of new concepts. This FreeBook thus provides library practitioners and students of Library and Information Science (LIS) with a discussion on traditional usability (UX) work as a subset of ethnographic practices, eliciting data on user behaviour, and providing a road to transforming institutional practices through anthropological insights – all of which is in light of Digital Ethnography in the Library.

This FreeBook features contributions from experts in their field, including:

Andy Priestner, the manager of Cambridge University's pioneering FutureLib innovation programme, employing user experience and design thinking to develop new library services. He is also the founder of the UX in Libraries Conference and provides training and consultancy on the subject.

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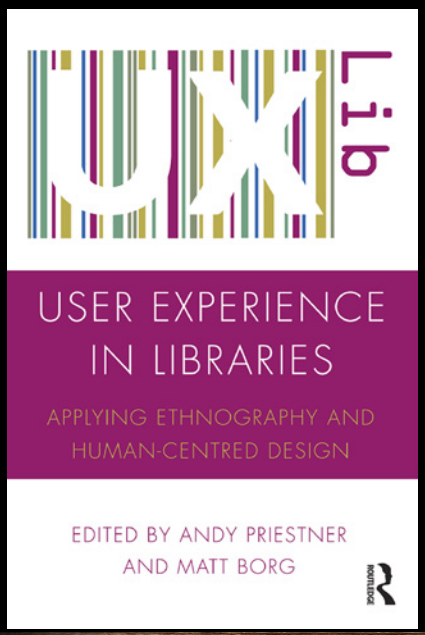

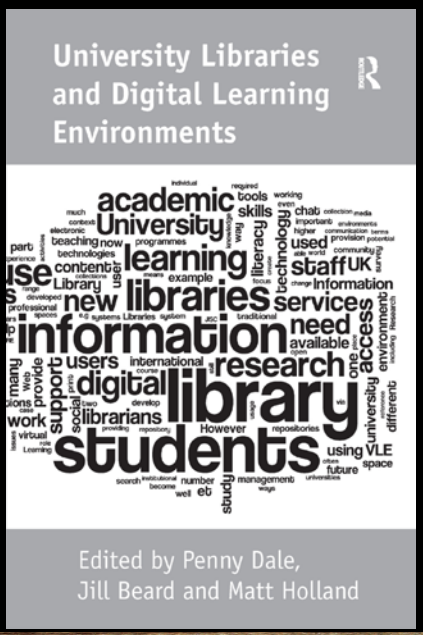

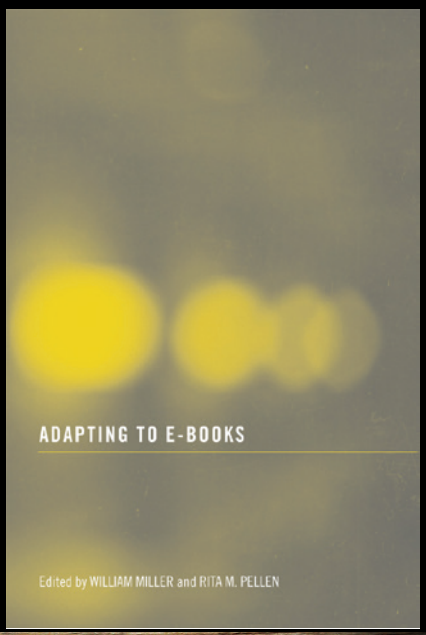

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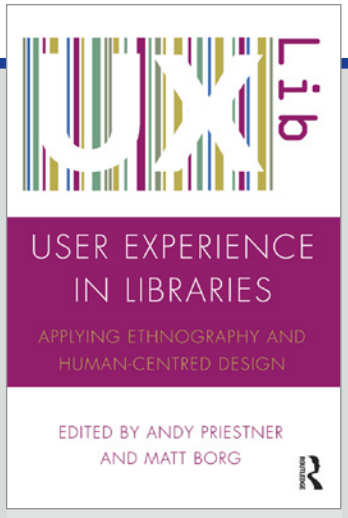
CHAPTER

1

USING ETHNOLOGY METHODS TO STUDY LIBRARY USE



This chapter is excerpted from

User Experience in Libraries

Edited by Andy Priestner and Matt Borg.

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USING ETHNOLOGY METHODS TO STUDY LIBRARY USE

By Bryony Ramsden

Excerpted from *User Experience in Libraries*

As a librarian, how much time do you spend in the library? Not in the office, or on the enquiries desk, but actually in the areas your visitors use. Do you use your own library? The chances are that you don't get to see much of what goes on in your library, and that much of what you know about visitor use comes from surveys, complaints or from briefly spotting something as you walk through the building. Using information from surveys and responding to direct user feedback are both important ways of learning about what's happening in your library, but they don't always produce the level of data that tell you enough about usage requirements. They might tell you that your visitors want silent areas, but not necessarily where they'd like to see them; whether they work once installed; what kind of people use the areas and whether they follow the rules. The example of silent use preference is a simple one, but demonstrates that there is a need to go beyond the kind of data surveys provide. As Given (2006) so concisely puts it, quantitative research can give you information on the characteristics of usage, but it can't tell you the 'why' of usage patterns. Surveys also rely on self-reporting, and respondents won't necessarily say what they actually do (or may even hide it if they know it is against library policy).

An excellent way to learn more about use is to utilize ethnographic methods. Ethnography is a term often connected to qualitative research in general, but its primary aim is to learn about cultures. The methods associated with ethnography can help you get more detailed, real-time, in-depth qualitative data that can be much more representative of what happens in libraries. Use of ethnographic methods is still comparatively new in the library world, considering how long they've been used in other disciplines, and fairly underused because they can be time-consuming and complex. However, they are also extremely revealing and can provide access to data unavailable via other more commonly used methods. Libraries in the US have been working with anthropologists and utilizing ethnography for some time: in particular, see work by Delcore et al. (2009), Duke and Asher (2012), Foster and Gibbons (2007), Kim Wu and Lanclos (2011), McKechnie et al. (2006) and Suarez (2007). The methods are starting to be adopted in libraries in the UK, though: Bryant et al. (2009) conducted an ethnography at Loughborough University Library; Atton (1998) was talking about using the principles of ethnography to learn about and develop library collections as a fairly early adopter; while ethnographers were already conducting research in schools, with school libraries featuring in work by Shilling and Cousins (1990).

WHY ETHNOGRAPHIC METHODS?

So, if so many people are doing some kind of ethnographic work, why isn't it

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happening more? The benefits outweigh the costs, but there are quite a few reasons why it may be overlooked, with the first being a misunderstanding of what ethnography is for or about. On a very basic level, you are probably already aware of ethnography, perhaps without even realizing it, and its roots can create some level of preconception. Anthropologists have been using it for years to learn about cultures different to their own, which may make you think of people studying small island cultures in far-off countries (the colonial white man looking at the 'other' is a common perception that many anthropologists are trying to renegotiate) rather than your own library visitors. However, the key term here is learning about cultures: our libraries have visitors that form a specific user group, which can be viewed as constituting a 'culture', that is, a collection of ideas, values, experiences and attitudes linked to a particular group of people. There will be subcultures within it, such as teenagers, students, researchers, the elderly, parents with children, or librarians as library visitors. Library users are a culture and have specific identities that can inform on their usage patterns (and in turn cycle back to inform the culture's identities), and thus show us how each culture responds to the library's policies, designs, resources or anything else we as library staff might provide. And that's something we really have to remember: we are library staff. We use libraries as library staff, whether we are working at the time in the library we are visiting or not. That differentiates us somewhat from the people we are providing for and supporting, although we might not always realize it. Using ethnographic methods helps us learn about the people using our libraries because we start to understand how they use them, in ways they might not even be conscious of themselves. In addition, using a critical approach to looking at the data collected will potentially help create an environment that enables and empowers the people who visit it – but that will be discussed later.

LOOKING BEYOND THE SURFACE

There are other reasons why ethnographic methods aren't as popular as they could be in library research. To carry them out potentially means dedicating a lot of time to data collection and analysis. If you choose to conduct observations and interviews, that's a lot of time to commit, which in turn can cost money in staff hours (and probably reimbursement to participants and interviewees). However, it is time and money worth investing. Let's say you decide that you want to buy a full set of replacement furniture for the library. The old stuff is looking tired, so you need to buy some new pieces anyway, and you successfully win funding to do so. Rather than replacing the furniture with like for like, you decide to be a bit more adventurous and buy some new fancy

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things to try and encourage new visitors and to brighten the place up a bit. However, you find that once the new furniture is in place people aren't using it, or they complain about it at the desk. So you decide to change things back and rethink the layout, as you still have the old furniture lurking about. You get more complaints from other people who liked using the new stuff. Aside from totally missing out on an initial consultation with current library visitors, you've also forgotten to try and ask why people aren't visiting, and you haven't looked at what people are actually doing in the library with each furniture set. Conducting some research would definitely have made a difference in this rather simplistic and frankly highly unlikely scenario (you wouldn't buy new furniture without asking people what they wanted, didn't like about what they had, or how they used the library, would you?). As a bonus, ethnographic methods would have helped you learn more about how people use the library furniture before you even started the process of bidding for funding. Additionally, you don't have to approach ethnographic methods as if you are going to do a full-blown ethnography, which traditionally can involve spending years studying a particular group of people. Without the full training anthropologists have, you are more likely to be doing something much smaller in scale, which doesn't require you to spend a solid year of observational data collection instead of your normal job. Ideally you would be able to employ an anthropologist to work alongside you on a permanent basis and help you learn about your visitors, but what if that isn't an option? You can utilize methods drawn from ethnography and gather data that is extremely useful to you without having to dedicate months or years of time to the research.

Which leads to one more reason why people might decide not to take the ethnographic method route: they've never done anything like it before. They may have conducted some research or run some surveys, but they haven't ventured into what can appear to be a slightly intimidating practice because of the amount of data and analysis it might involve. Ethnographic methods are what you make of them, and even more so if it is you who gets to make the decisions in your library. Smaller scale use of some of the methods can be quite similar to research already in common use, so it's a matter of piloting a method to see if it can work for your purpose. In some cases, you might already be using ethnographic methods without realizing it, including that moment when you spot something happening as you walk through the building.

WHEN TO USE ETHNOGRAPHIC METHODS

To start off with, you probably already have an idea of something you want to find out, and you need to consider what method is best for your research question. It might

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seem obvious, but don't dive in assuming ethnographic methods will work to answer all your questions. If you want to know whether people are for or against opening on a Sunday, then that's more of a survey question. If you want to find out what purpose people have when they visit on a weekend, that could be a mixed methods piece of research: that is, you'll probably want to use a combination of statistics to measure how many people use the library, and some qualitative data to find out the purpose of their visits. If you want to learn more about what's actually happening in the library when you are open, you might want to start applying ethnographic methods.

Using ethnographic methods to study library use can give you more detail of what often goes unseen, things that you might even be aware are happening but are effectively hidden when you try to research them because you don't get the answers you were expecting. There are all kinds of ways you can use the methods to find out more, as the literature mentioned earlier demonstrates: website usability, building usage patterns and wayfinding, and information-seeking behaviours are just a few examples of research where ethnographic methods can be particularly useful.

TYPES OF METHOD

Methods used in ethnography are numerous, so this is a starter guide with lots of information on where you can learn more.

OBSERVATION

Observation is the one people will most likely be aware of. Spending time with the culture you want to study is a great way to learn more about it. There are a few ways you can conduct observations, but these are two of the main ones:

- *Active participant*. This is where you join the group you want to learn more about and take part in their activities as if you were a member. Active participant observation (like all observation methods) is conducted without making judgment on the behaviours that appear as you observe. This kind of observation can make a difference to how the people you are observing behave if they are aware you are observing them: they may try to impress you, or shut you out of their normal activity.
- *Non-participant*. You might spend time 'in the field' observing what happens, but in contrast to active participation you don't get involved at all in what is going on, and remain a detached observer.

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There are a couple of ways of conducting observations whether you are a participant or not. You can either overtly observe, ensuring you tell everyone you can that you will be collecting data, or covertly observe people, observing without telling anyone what you are doing. To make things a bit more complicated you can also be semi-covert, and notify people that you will be undertaking observations but not tell them exactly where or when you will be doing it.

In all types of observation you need to be aware of the ethical implications of what you are doing, so think carefully about what is the most appropriate method. Approach observation in the wrong way and you can walk into a minefield of problems. Think of your legal responsibility to participants in the first instance. Get ethical approval for observation from both the people who run the place you want to observe in, and from an ethical panel (if you work in education) or legal advisor (if you work in public libraries) if possible. Theoretically, libraries of all kinds are public spaces, and in the US and Canada regulations will allow you to conduct observations in public places as long as you don't endanger any- one (for an example, see work by McKechnie et al. [2006]). In the UK it's a bit different because of English and European human rights laws, and because of research guidelines such as those published by the British Educational Research Association (2011) and the Social Research Association (2003), so check with whomever is funding the research. They will usually conduct ethical checks on your research plans, or obtain legal advice if necessary. Make sure you write up an information sheet for anyone who may have any questions. These are useful for all kinds of observation, whether they are handed out or displayed at the library entrance, uploaded to the library website for information, or distributed during covert/unobtrusive observation if you are spotted and asked questions. Include an opt-out clause with information on whom to contact if they want to be excluded from the data collection.

You also need to decide what kind of observation data collection process to follow. One option is to note down pretty much everything you can about what's going on within ethical remits: you don't want to be noting lots of personal conversation if you don't have permission to do so from the people you are observing! Otherwise, noting down everything does mean everything with as much detail as possible, whether it seems important or not at the time. While quite hard going to carry out, it is extremely revealing and can generate useful extensive data: you learn a huge amount about all the ways people use your building and spaces. When making notes, it might be useful to follow the double-entry notes style to aid logging what happens without making assumptions or judgements on actions. It's important to try and avoid judging

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what's happening while it happens, as unless you speak to people directly you don't really know what their motivations or feelings are; you only know your own interpretations. Naturally it isn't possible to be totally independent of your own assumptions, however, so using the double-entry system will help you work with that. You use one column for describing actions as they occur, and one for your own thoughts, feelings and ideas about what is happening. That way the two are separate, but you have prompts as to how things appeared at the time, and you have an increased awareness of how much conjecture you are making about the data.

The other option is to collect structured observation notes, creating a list of things you want to look for and chart when and how often they occur, as well as potentially logging details of them (as in Paretta and Catalano [2013]). This ventures a bit more into a mixed method approach, as it involves some level of counting incidents, and you may be limiting yourself to only the items in the list without noting other behaviours or occurrences. However, it is much simpler than detailing everything and makes the process much more focused if you are conducting smaller-scale research. Whichever method you choose, you'll need to start by piloting and practicing data collection, and refining the list of items you want to include if you use structured observation.

INTERVIEWS

Interviews are an excellent way to learn about how and why people use or don't use your facilities, and yes, you will want to try and learn about those people who rarely visit. If you have been conducting observations they will link directly into your interview process, generating questions and discussion points. If not, you'll need to start from scratch at creating some questions that will be open enough to prompt discussion and inform but closed enough to get the answers you need. There are a few routes you can take for your interview design:

- *Open-ended/unstructured interviews*. As the name suggests, these are very open and exploratory, and involve allowing the interviewee to lead the discussion. However, you will need to plan out how you want to guide the interviewees through the process so that it doesn't just end up as a conversation that doesn't tell you anything: create a list of goals for what you want to learn about by the end of the interview. Questions might involve asking the interviewee to describe a typical day that features a library visit, or telling you about what they do when they visit the library.
- *Semi-structured interviews*. These are fairly open and work well when used in conjunction with observation data. Design questions to discuss what you've noticed when observing, but leave them open enough for the interviewee to talk

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about their own usage. For example, to learn about specific incidents you have observed, or a particular kind of library use, design questions based around these topics. Questions could be along the lines of asking the interviewee to describe what happens when they want to borrow a book from the point of trying to find out if the library stocks it to returning it; or you might ask about how they use a specific area of the library, if at all, and why they do or don't use it. The questions can be moved around if they fall naturally into a different order, and can be added to during the interview process to learn more about a specific comment the interviewee makes.

- *Structured interviews*. These involve highly specific questions that will directly ask about the issues you want to learn about in a very prescriptive way. You'll probably already have some very clear ideas about what you want to learn about, and structured interviews provide a method to learn about just those subjects without moving away from them. The interviewer still needs to guide the process without being too closed, as there's a risk that no useful data is collected. Questions for structured interviews will always be the same for each interviewee, regardless of their use or non-use of the library, and asked in the same order. This style of interviewing could involve asking participants about how they would score a specific library service and why, or about how satisfied they are with staffing levels. Structured interview questions can often be conducted as printed questionnaires, but the interview process provides the opportunity to prompt for clarification or more detail, thus differentiating itself from the problematic survey process mentioned at the start of this chapter.

The trick in interviews is to avoid closed questions that only prompt a yes or no answer, because they won't tell you anything much. Also be aware that while it is good practice to try and build rapport with your interviewee so that they feel they can talk openly to you, avoid putting words into their mouths by encouraging them to respond in a certain direction. Expressing your own opinion on a topic may influence their answers, whether they agree with you or not, so try and be friendly, non-judgmental and receptive without prompting in a particular direction. To learn more about interviewing, try Hammersley and Atkinson (2007), Schensul et al. (1999) and Spradley (1979).

For interviews, you'll need to create a consent form and an information sheet including the contact details of the researcher to make sure interviewees are aware of your research intentions and their rights. Examples of consent forms and information sheets can be found on most university ethics websites (useful resources no matter what kind of library is being researched), so modify content to suit the

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circumstances. They usually need to contain check boxes to confirm that participants understand the important details about the research, including (at the very least) the way the interview is recorded, how the data will be stored and the option to withdraw from the research at any point.

COGNITIVE MAPPING

Developed from a concept used in psychology, cognitive mapping is a deceptively simple process that can provide a wide range of data for a variety of use and non-use patterns, and has been used to great success by the ERIAL (Ethnographic Research in Illinois Academic Libraries) Project (Duke and Asher, 2012; Green et al., 2014), Donna Lanclos (2013) and many more. The participant is given a sheet of paper with the research question at the top of the sheet (usually landscape- oriented), and asked to create a 'map' of their answer over 6 minutes, changing the colour of their pen every 2 minutes. They then label up what they included in the map, and describe and discuss what they have created. The word 'map' can be interpreted as the participant wishes, so it could be a mind map and text based; it could be something closer to a geographical map, detailing various spaces in relation to each other; or it could be a drawing of specific places and objects.

Because the participant has used different colored pens during the process, you can draw some rough conclusions immediately about what is potentially the most important to them or the first place they go to. The labelling and discussion will provide more information about why exactly they were drawn first, why things included later in the map were left until that point, and what was omitted and why: certainly the omissions can be as interesting as what was included. The map is used to prompt questions and discover talking points, but having a few themes and questions prepared prior to data collection will help focus the discussion in the direction you want it to. Using this method will help you learn about what works for your participants outside of the library as well as inside it, and while you may not wish to replicate other kinds of environments within the library, you can con- sider borrowing from their features to modify the library.

FOCUS GROUPS

This is pretty much what it says on the tin, and not purely ethnographic as such: getting a number of people together to talk about using or not using the library is a potentially useful way to learn more about what works and doesn't work in it. The focus group method is listed last, as while it is a useful, it is also a bit problematic.

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Approaching focus groups from an ethnographic perspective means they can be used as a way of collecting observational data, focusing on the participants' experiences. Be aware that responses may differ in comparison to interviews depending on the personalities of the participants: they may influence each other's opinions and responses somewhat, but that kind of interaction could be useful.

What the focus groups have that interviewing doesn't is that level of conversation and discussion that can arise between multiple participants. They may feel more relaxed discussing things amongst each other rather than directly with the interviewer, but naturally this may also swing towards feeling less comfortable discussing things if there is a dominant opinion/speaker. That's where your level of control over the discussion comes in, where you need to attempt to bring the quieter participants to the front of the discussion and give them the opportunity to speak as openly as possible. That's not an easy task, as it depends on the individuals as to whether they would feel comfortable enough to say something that contradicts what others have said, and it may be worth considering using focus groups before the interview process and then asking some of the participants to return for one-to-one interviewing.

One of the ways to help stop participants feeling that they can't speak out easily is to start the group with a task. Delcore et al. (2009) used 'bootlegging' work- shops, providing participants with a theme to focus on before asking them to break into smaller groups and create a skit about the related issues, or offering them the opportunity to design library spaces. Foster and Gibbons (2007) asked students to create their own designs for the library refurbishment, something that I've also done in my own research using LEGO, drawing materials and modelling clay. There's still some level of difficulty in encouraging equal participation, but providing a specific task to work on in groups or individually and then gathering together to discuss what they worked on or created can generate discussion and provide more opportunities for each participant to speak.

WHAT DO YOU DO WITH THE DATA?

Once you've conducted your research, you should have a ton of data to go through. Many others have covered how to analyze the data collected (see the ERIAL Project in particular, which provides an excellent toolkit on its website [Asher and Miller, 2011]; also see Saldana [2013]), so I won't go into too much detail here. There are as many routes for data analysis as there are for data collection, if not more: grounded theory, statistical analysis (in some cases), and thematic analysis, to name but a few, but here

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I'll just talk more generally about 'coding' your data. Do you want to let the data drive your analysis, or do you want to look for specific themes or incidents? This choice will narrow down your approach straight away, but using an approach to data analysis like the routes listed earlier may be beyond the time and scope of your project.

The simple starting point is to begin coding: looking for and labelling any themes or concepts that appear in your data. Themes and concepts could be any- thing that is discussed, such as noise, food and drink, proximity to resources and so forth. Start broad, picking out as many concepts as you can and tracking their frequency, looking for commonality between them as well as the more unusual or unique occurrences. Then start refining them: look for duplication where themes are too close to be kept separate. You can still tag them as points of interest, variation or discussion. Once you have a set of codes to work with, start formally tagging your data with them, either manually using a highlighting technique, or automatically by using software. Which of these methods to use is very much a personal preference. I originally started coding my data using software, and found that I lost track of the content and got too concerned about the codes themselves. I found working in word processing software let me highlight and comment on the data just as well, but events and points of interest felt more overt and part of a bigger picture when I was reading through, rather than standalone moments separate from the rest. However, it is definitely down to what works best for the individual. Make sure you keep a record of how you code your data so that you can recreate the process and find your codes later more easily. After you've coded all your data, you need to collate the codes into themes, and then you can start to consider what the codes and themes tell you about the use of your library.

If you took the structured approach you will probably find the data guides you through the analytical process, as you've been focused on what you want to find out from the start, and it is more a question of deciding what to do with what it shows you. Most of the data you collected from structured observations will often be number-based: counting the number of actions and when and where they happened will factor into some level of statistical analysis, often using software. However, you will probably also have additional notes and data related to the actions that will need some consideration, and will need to be examined alongside the statistics. If you carried out interviews as well, you can start to link up the behaviours and actions you've observed with the interview data and see if they contradict or confirm each other.

In the less structured approaches, you may find an inductive process more appropriate (i.e. letting the data lead how you code), or you may already have some

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ideas about the data you've collected and decide to focus on looking for specific issues or elements. You probably have already developed a sense of the data by this stage from preparing for interviews and possibly even have some preliminary coding completed, which should help start the analytical process proper.

CRITICAL APPROACHES TO YOUR DATA

I'd like to suggest at this point that you consider taking a critical standpoint when you are investigating your data during the coding process. A critical standpoint here means approaching the data from a specific sociopolitical perspective, so you could look at your data for any issues related to inequalities with regard to disability, gender, race, or social background (if you have engaged library users to allow you to conduct active participant observations). The landscape in libraries in the UK, be they public or academic, is shifting towards concerns over money rather than the needs of the library's visitors. Library users are also changing, particularly in the higher education sector; we need only read the Higher Education Academy's report (Temple et al., 2014) on the student experience following the introduction of fees to see how usage patterns are changing for some institutions. Public libraries in the UK are facing closures, which potentially removes access to information, both on- and offline, for many people who don't have access to information, computers or the Internet elsewhere, which in turn can lead to a reduction in agency. Studying use or non-use of your library spaces can be used to help improve agency of users, be they public or academic library visitors, and help curb inequalities between different cultural groups. If you decide this is a route you want to take, I recommend looking at Schostak and Schostak (2008), but there is a lot of research out there that takes a critical standpoint and can help lead your planning and analysis, even if it isn't based in libraries.

USING YOUR DATA

However you look at your data, it's important not to have a knee-jerk reaction and change everything immediately. I'd also suggest that if the data shows something you don't like about usage patterns, remember that it isn't you using the library and that, depending on the usage patterns (obviously some types of behaviour are not acceptable at all!), you consider whether you need to rethink your perceptions of library use. Any changes that you decide need to be considered for implementation should be fed back to the library users for their opinions before you take any further

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action and potentially spend money on them. Keep collecting data regularly if possible so that you can compare it over time, see if anything changes and whether any change might stem from any actions you take.

I'd also recommend very carefully considering changes where you borrow design features and service ethos from commercial ventures like coffee shops and book shops. Those companies exist to make money rather than provide a service, and while library users may like the environments they provide, you are also potentially communicating a specific message based on that commercial ethos that will influence how your library users interpret and use the spaces you provide. It isn't to say that you should completely discard any changes that match the kind of designs they have, but the implications of incorporating that style on a wide scale need to be reflected upon.

CONCLUSION

I've summarized a few different routes you can take to conduct ethnographic-based research in your workplace, and hopefully whetted your appetite to try them. I've also made you aware of the complexities of the process. The data you can collect using ethnographic techniques are extremely revealing, intriguing, exciting and often difficult to obtain by other methods. There are lots of places you can learn more, and I provide some in the references. Look beyond the numbers to seek out the information that usually matters the most to the people using our libraries – what happens when they are in our buildings using them.

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Excerpted from *User Experience in Libraries*

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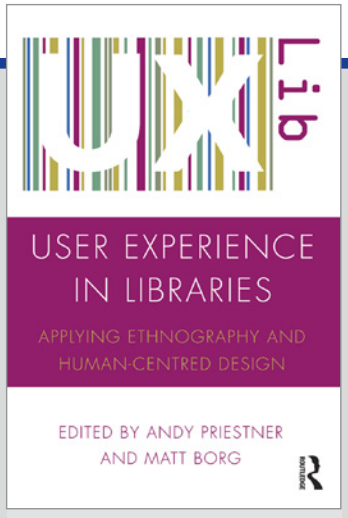
CHAPTER

2

EMBRACING AN ETHNOGRAPHIC AGENDA

CONTEXT, COLLABORATION, AND COMPLEXITY



This chapter is excerpted from

User Experience in Libraries

Edited by Andy Priestner and Matt Borg.

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EMBRACING AN ETHNOGRAPHIC AGENDA

CONTEXT, COLLABORATION, AND COMPLEXITY

By Donna M. Lanclos

Excerpted from *User Experience in Libraries*

The decision to incorporate ethnography and other qualitative methodologies into the work of libraries can have a transformative effect on institutional practices. Adopting such an approach signals the conviction that institutional spaces should be comprehensible, and not just to insiders. Qualitative approaches to understanding library users provide opportunities, provide space, give chances for breath, reflections, possibilities, and perhaps most important of all, for persuasion.

Libraries are portals today – as they have always been – to content, to information. They are also increasingly locations that provide access to people and tools and places for the creation of something new. As locations for collaboration – among students, among staff, among community members – libraries stake a claim to something new, and something terrifically difficult to quantify. Universities are not just in the business of reproducing their faculty, nor should they be, not any more than they are simply vocational training grounds. Thus, libraries must be about access for all, not about the narrow range of users who will go on to be professional scholars.

Here I discuss traditional usability (UX) work as a subset of ethnographic practices, as one particular way among many of eliciting qualitative data about user behavior, and more importantly as an avenue to transforming institutional practices and increasing the role of library voices in shaping such practices. Taking a policy stance grounded in qualitative research requires reflection, backing away from assumptions and accepting the risk that what is revealed might be uncomfortable or contradict long-standing practices and beliefs about user needs and priorities. Institutions willing to take on those complications can thrive. Institutions that want the publicity that comes from ethnography but not the work, not the ambiguity, and not the full-time commitment will fall short. They will miss the opportunity to transform their practices and fail to find new ways of making arguments about how and why to spend money, resources, and time effectively. However, a methodological turn to the qualitative is not enough; insight also requires an openness to an anthropological worldview, and a willingness to not-know on the way to greater comprehension (Harouni, 2009, 2013; Stommel, 2014).

Ethnography is literally 'writing culture' (Clifford and Marcus, 1986), but is often taken to mean the cluster of techniques that researchers engage in to gather detailed descriptions of everyday behavior. Ethnographic techniques can include but are not limited to participant (or immersive) observation, structured and unstructured interviews, visually based instruments such as photo diaries, and mapping techniques intended to elicit people's interpretations of landscapes and social

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structures. They provide ways for researchers to gain insight into the logics behind people's behavior by situating their choices in broader social and cultural contexts.

Via ethnographic work, we gather stories, we gather what anthropologists call 'ethnographic authority' – the authority to speak that is grounded in 'being there', in effective representations of our users' realities, because we did the work. Stories can be ambiguous and powerful. Stories can encourage us to learn more. Stories, taken together, can begin to reveal patterns. Those patterns emerge from a better and better known past and present, as revealed in the qualitative data. Interpreting such qualitative data is risky, and opens us up for uncomfortable moments, debates, and possibilities that we might be wrong. I would argue that it is less important to accurately predict changes, for example, than to be able to recognize what is a change, as it is happening, and not be so locked into 'The Way We Do Things' that it's impossible to respond to changes. This is what 'agile' should mean; libraries that purchase furniture, or build a website, or take any other decision thinking that they are establishing something that will last 10 years, cannot respond as effectively to change as those who accept that they may need to change things in 6 months, a week, a year. Perhaps if institutions think decisions should stand for 10 years it does feel more important to predict the future. But a better path is to be plugged in to the present, so that responding quickly to conditions on the ground is more possible, and more effective. 'Agile' then comes from a genuine connection to what is going on, a recognition that sometimes our understanding of what is going on is incomplete, or incorrect, or both, and then a willingness to act on that recognition.

THE PROBLEM OF LIBRARY LEGIBILITY, VISIBILITY, AND VOICE

Historically, libraries in Western culture have been heavily mediated spaces, with collections/materials as well as buildings that were configured to facilitate that mediation – gates, desks, collections behind doors that could only be accessed by the professionals. Academic buildings, libraries included, are not generally laid out for the benefit of the people who will be using them. They are designed by architects hoping to make a statement about themselves and the institution they are working for; the rooms are numbered by facilities managers who organize the space according to the work their staff need to do. The locations of the buildings are often determined as much by where available space to build exists as by where it would 'make sense' to have the buildings constructed. The ways in which such buildings as libraries, classrooms, and student unions (among others) 'make sense' are not uniform, and depend very much on who is navigating those buildings, and for what

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purpose. We are now in a time when people are increasingly accustomed to using digital tools (such as Google Maps) and mobile devices (like smartphones) to navigate physical spaces. When they enter most academic buildings, those expectations are thwarted. Library buildings (and, not incidentally, library websites) are traditionally not terrifically intuitive, except to people who have been trained to use them. Unfamiliar buildings and websites can read as unfriendly. And places perceived as unfriendly swiftly become invisible, as they are avoided in favor of places that are familiar and comfortable, such as cafés, bookstores, and the open web.

What makes libraries visible to students? Research indicates that it is not librarians, or library websites (Connaway, White and Lanclos, 2011; Connaway, Hood et al., 2013; Connaway, Lanclos and Hood, 2013; Schoenfeld, 2014). Library resources and the people who work within the library are made visible when attention is paid to the ways that people already search, the cues that they are looking for, and the conventions of the open web. Leveraging relationships that people already have with each other, with their instructors, and with familiar digital tools and places such as Wikipedia, Google, Facebook and Twitter can then make all of the different possibilities within libraries (as spaces, as collections, as communities) visible in the wider web. For libraries to be visible to their communities, discovery cannot depend on prior knowledge of specialized systems. Rather, those specialized systems should become natural extensions of the networks people bring with them to university, and build and extend while they are there.

Library websites are perceived as useful or usable according to the vernacular of the wider web, not just our own local environments. This is likewise true for our physical places – useful places are comprehensive and navigable, not just by expert users but by most people who walk through the doors. Library spaces become more visible as they are more easily discoverable, whether it is through face-to-face opportunities or digital proxies such as virtual tours. Tours, events, classes, and digital tools such as wayfinders and study room booking software can be leveraged to make the library building familiar and more friendly long before students need to use it (and the resources within) during exams, research projects, and collaborative projects. And the tools and spaces in libraries can be made familiar by paying attention to the kinds of places, libraries or otherwise, that attract people. In the same way that the conventions of the open web should inform library (or any institutional) web design, the conventions of comfortable productive 'third places' (public gathering places that are neither homes nor institutions, but in between [Oldenburg, 1989]), such as cafés, can help libraries feel accessible to people who have never been in academic spaces

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before. When I collect photo diaries from undergraduate students, one common response to 'favorite place in the library' or 'most useful place in the library' is a photo of the library café. This contrasts with the many photos of library stacks filled with books submitted in response to 'most confusing place in the library' or 'least favorite'. If people think there is a café in the library, they have something comforting and known to ease them towards the rest of the less familiar components.

There are increasing numbers of libraries in higher education whose agendas have been taken over by information technology (IT), or dictated by central administration, rather than being approached as partners in the work of the university. But traditionally, library reporting and analytics are largely responses to interlibrary queries and library-centered accreditation processes. Library staff are talking in tight loops to staff in other libraries, or to themselves, with and about their data (ACRL, 2010). The near-frantic levels of quantitative data collecting are therefore going into reports that may or may not get to the people who libraries need to influence. These data reports are the equivalent of LibGuides: tools used by librarians that primarily communicate with other librarians – even if, in the case of LibGuides and quantitative data, they are assembled with the intention of also communicating outside of the library. At the same time, people who run and work in libraries are worried (and rightfully so) about getting the right sort of attention, generally in the form of resources, from their universities.

The kind of quantitative data traditionally collected by libraries has not proved effective for talking outside of the library, not for reaching the people they need to reach within and outside of their institutions. The problem of library visibility is evident from the persistent anxious discourses about the Future of Libraries, the Threats to Libraries (especially the Threats to Funding of Libraries), and the Utility of MLIS Degrees, and the problem of the lack of library voices in higher education policy made evident in the examples of academic libraries being radically cut, or taken over by non-library parts of the university – their voices muffled if not silenced altogether. Too many libraries have lost their voices, or are only using them to talk to individuals or parts of the institution who cannot help with their agenda. Buildings being built or spaces being planned on university campuses powerfully resemble things that I would call 'libraries', but many are not called that. There are 'hubs' and 'learning centers' and 'commons'. 'Library' is a word that has associations that some people think should be left behind, but part of the power of the word library is that it can mean so much:

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Books. Quiet. Shelves. Distraction. Friends. Computers. Space. Librarians. Refuge. Anxiety. Café. Printing. Scholarship. Community.

Qualitative data and the research agendas that yield such data can provide paths towards a stronger voice for libraries in higher education, and more effective policies on behalf of library users. Qualitative approaches point the way to building the relationships necessary to demonstrate and further develop the important role of academic libraries within higher education. Libraries cannot build relationships by counting things. Rather, connections emerge from work, with collaboration, from being embedded into the work of higher education. This is work that has always been done within libraries, and it is more important than ever to make that work visible and explicitly connected.

THE COMPLICATED STRENGTHS OF QUALITATIVE RESEARCH TECHNIQUES

Qualitative research in libraries has two primary purposes: to improve user experiences and to more effectively communicate with those who fund and otherwise support libraries. Qualitative research is messy, in execution as well as in the data it yields. The stories it can tell may be unclear or contradictory. Paradoxically, this can lead to simpler policies, less messy procedures, a clarity of configurations born from a sense of the sheer variety of human behavior, and the need for flexibility to accommodate that variability. Telling stories, using the data to tell stories, can sound trivial, and can be rejected as 'anecdotal'. But there is a power in stories, in their relationships with one another, their resonance with a lived reality that is not effectively represented in spreadsheets and bar charts. Qualitative data gives us a chance to represent our patrons as people. This is not trivial. Numbers get in the way of our recognizing that we work with people. Being forced to transform human experiences into numbers by the institutional assessment requirements is not just awkward and time-consuming, but frequently does not facilitate effective arguments for human-centered, grounded policy.

Qualitative practitioners such as anthropologists should ideally be embedded in libraries as full-time members of staff: capturing, collecting, collating and disseminating those stories is far more possible in a situation where one is consistently present, capable of seeing things as they happen, capable of absorbing and collecting more context. This is the model for my own position at UNC Charlotte, and was for Nancy Foster's position at Rochester (Foster and Gibbons, 2007). Allocating a full-time position to such work can be a challenge to resources, but can

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yield benefits in voice, in influence, and ultimately in potential for more and different resources in the long term.

For example, on the ground floor of my workplace, the J. Murrey Atkins Library, ethnographic methods helped give us the information we needed to tell effective stories to administrators about the kinds of spaces we needed to configure for our students (Lanclos, 2015). Taking photos of student workspaces in the library revealed the amount of 'spread' they required for all of the materials that they have with them while studying: books, tablets, laptops, paper notebooks, phones, calculators, food and drinks. Observations on the main floors of the library revealed that students working together at computer tables didn't have enough space to sit, and could not easily share materials on one regular desktop computer screen. Photo diaries we collected over several semesters revealed that students do not just sit at desks in task chairs when they are writing research papers, but sit on couches, or even in their beds. Academic workspaces are varied outside of the library, but were fairly homogenous in Atkins pre-2009: there was only one couch, and the two modes were either at hard furniture (tables or carrels) or in soft (single) seating with coffee tables. Group study was only possible in a few bookable rooms. Our new ground-floor study commons has varied types of furniture; bookable spaces for small and large groups; and many screens with integrated computers, so that students can either plug in their own device or walk into the library without any technology and still be able to do the work they need for their classes. Glass walls throughout ensure that students can see the work that their peers at the university are doing, providing a visual for the academic community of practice of which they are members. The library has become more usable, in adding this space that did not exist before. The students have more access, institutionally, to the resources they need for their studies.

Institutions that do not have the resources to dedicate a full-time position to qualitative data collection and analysis would do well to carefully consider how they can incorporate qualitative practices into the workflow of their current staff – what are they currently doing that is less effective than qualitative approaches? What more can be gained, substituting or supplementing current library work for some of these techniques? In addition to providing an opportunity for more and better learning places for our students, the attention paid to UX and ethnography has made Atkins Library, at this point 5 years after we started with agendas, an authoritative voice in our university around physical and digital policies. The library is not just in the library anymore. Our engagement with these methods has given us a voice that is heard, a place at the table, and resources for our community.

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USABILITY AS A MOTIVE

Why do we care about usability? Institutions can care about usability in the service of selling more things to more people. They can care about the behavioral logic of their 'customers' so that there are increasing levels of satisfaction with what is bought or consumed, and also a loyalty to institutions who provide good experiences. That is the marketing approach: 'Try us, you'll like it, we're easy.'

Usability is a perspective, a philosophy, a conviction that systems and buildings and signs can be created that are self-evident, widely intelligible, and do not require mediation. Being motivated by usability signals a concern for access – if the environment surrounding resources is not usable, then it does not matter how high a quality the resources are, they will not benefit any user, because they will not be engaging with those resources. If patrons cannot figure out how to navigate EBSCO, it does not matter how much libraries have paid for access to the peer- reviewed articles in those databases; the articles will not be used.

Higher education is a public service. Universities are portals of information, and resources for people who need more than information. Education should ide- ally facilitate the development of people who can use information effectively and think critically about information. Such people need partners in navigating the information landscape – libraries can be those partners, and can also contribute to building the information landscape so that it is as accessible and usable as possible.

If libraries are about access, then usability is a crucial part of that mission. One has to only think about all of the things public libraries are used for – medical knowledge, legal knowledge, job seeking, psychological seeking, social reaching- out. Some things people will not do if they have to be mediated; they will just give up. Making sure that library resources are accessible is the reason that it is important to take the risk of de-centering our expertise, to allow people who are not librarians to speak to what libraries mean for them, independent of our individual or institutional intentions. This is not to say that libraries should give up their voices, but that they make an awareness of the priorities of all of the people using their physical and digital spaces a central part of policy discussions, and so inform the library voice with a grounded knowledge of the priorities and behaviors of their academic community.

Usability is about more than our own places and how they work, and also far more than the digital. It is about the places our users go, and what they need to do in the course of their academic work, and how our resources do or don't articulate well with

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those environments. The persistence of books as resources that students want and need (either as library resources or bought to own) is in part because of the places where they need to work – not necessarily with Wi-Fi, not necessarily with electricity, not necessarily with the resources themselves to buy the devices that require Wi-Fi and electricity, and that can also serve as e-readers. To what degree can buses and trains be seen as learning spaces? Why or why not? If you are concerned about usability of websites on mobile devices, are you paying attention to whether or not people have access to mobile devices at all? Do they have access to the textbooks they need? What impact do electronic texts have on access? Usability is implicated in all of these questions.

For example, when we in Atkins Library committed to only buying electronic book packages that are unlimited use and DRM-free, that was a decision that facilitated access for students and instructors to materials they use for teaching and learning (http://library.uncc.edu/etextbooks). At least 100 textbooks per semester are available through the library, at no additional cost to our students or faculty, because of proactive policy decisions around vendor contracts and electronic resources. Simply making sure that the contracts allowed for the sort of use of these materials that we know our patrons need is paying attention to usability and to access.

EFFECTIVE USABILITY: TIME-WASTING AND ACCESSIBILITY

Digital spaces such as library websites are operational spaces where information has been organized according to principles that are likely to be unfamiliar to non-expert users (Kim Wu and Lanclos, 2011). Even outside of academia, the need for attention to usability looms large in an environment of increasing expectations by everyday users of those digital spaces for easy navigability and intuitive content – think about the difference between the interfaces of the Google search page and that of EBSCOhost. Corporate and commercial spaces engage in wayfinding practices to drive their customers into places that the company wants them to go. In IKEA, for example (Potente and Salvini, 2009, pp. 38–41), the path is clear, and laden with things the people could buy; the directional pathmaking is masterful, clearly intended to walk customers past as much merchandise as possible, so they can be maximally encouraged to purchase something. Recall, too, that the motives of entities such as Google and IKEA are not the same things that motivate libraries (increased access to knowledge) but by increased access, ultimately, to money.

Those working within academic spaces should not be in the business of directing

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people to where we think they should go, or in profiting from the information we gather about their behavior, but we should be invested in in helping people find where they need to be. Individuals enter university spaces with their own priori- ties. Effective usability, in this context, is about allowing students and faculty to find their own way to the resources important to them, swiftly and effectively, in physical and digital environments alike.

If our systems are so complicated and our buildings so illegible that they require mediation, that people walking into our libraries or encountering our web environments for the first time have to come to us for help in navigating links or hallways, we are wasting everyone's time. We are wasting time being tour guides, traffic cops, gatekeepers, that could otherwise be spent having conversations, picking things apart, writing things, producing content, analyzing thoughts, or making something new.

Universities and their libraries have a responsibility to be accessible. The purpose of education is not to produce people to work at jobs. It is to produce effective citizens, engaged human beings, people not just capable of independent thought but people who revel in it, who are so good at it that they come up with solutions to problems, that we make the world around us a more engaging, more constructive, more supportive, better place. If the only people who can comprehend what we are doing are the people who already know the ways to navigate complicated institutional places, then we are not educating, but sorting.

Critical thinking happens in groups – distributed critical cognition about value and authority happens all around us. It is particularly visible on the web in the form of reviews of things such as books, movies, and products to purchase, but is also present in blog conversations about theory, in Twitter discussions of policy, in Facebook fights about inappropriate jokes and memes. Libraries and universities provide nodes where people can come together to think, to argue, to consume with an eye to produce. Usability study techniques can help us think about the kind of environments that provide shortcuts to that production of content. UX approaches can facilitate thinking about physical and digital places that don't get in the way but that accelerate the process of scholarship, of communication, of effective policy, of education.

> The most profound technologies are those that disappear. They weave them- selves into the fabric of everyday life until they are indistinguishable from it. (Weiser, 1991, p. 78; see also discussion in Dourish and Bell [2011], especially pp. 9–11)

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ETHNOGRAPHY AS A METHOD

An effective ethnographic agenda in libraries should be about the comprehension of behavior whether it involves the library or not. Ethnographic practices, anthropological understandings of what is going on, can help situate the very idea of usability, and in particular help us realize that even notions of 'usable' are culturally constructed. In terms of usability, ethnographic techniques can help answer broader questions than whether the website is usable or intuitive. Once engaged with ethnography, we can ask: What are people doing when they talk about 'intuitive' design? Intuitive for whom? What constitutes 'intuitive'? Who defines it? What is that experience, of feeling something 'intuitive'? In a slightly different context, we can ask: What is studying? Is it the same as 'learning'? Who is in charge? Is that a meaningful question? What are the power structures we can reveal by tracing the actions and reactions of students, faculty, and staff in academic spaces? What is made, what is observable? What can we see, what needs more work before it can be shown?

What happens when we approach Google not as a competitor to the library, but as a made thing, a result of cultural processes? (Beer, 2009; Asher, Duke and Wil- son, 2013). What happens when we see that students are writing research papers on subway cars using their phones? (Smale and Regalado, 2014).

Ethnographic approaches necessarily explode usability out of the library into the spaces where people are, because the things that people do in the library are only part of the wide range of things that they need to do, and are often informed by those other things (schedules, people, other commitments, etc.). This is very effectively revealed in cognitive mapping exercises (Asher and Miller, 2011, p. 14), wherein students and faculty are invited to draw their academic landscapes. In 6 minutes they produce a color-coded sketch (occasionally a list) of all of the places they inhabit or visit when doing their academic work. At this point I have collected maps from the UK and the US, and in each case participants map the library as part of a larger system (Gourlay, Lanclos and Oliver, 2015). An undergraduate map from Charlotte, North Carolina, shows the dotted lines of the movement of a student from her apartment, to her friend's house, to the fast-food restaurant (which has free 24-hour Wi-Fi) near where she works, to the university campus, and the classroom buildings where she lurks in hallways between lectures until she has time to settle into the Student Union for a break and more studying (thanks to more Wi-Fi), or the library for the same, depending on where her next class is located on campus. A map from a faculty member shows not only all of the different university libraries in the Bloomsbury area of London that he frequents, but also the chair and footstool where he sits to work at

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home (along with his cat), his office at the university, the nearby café where he meets with his graduate students, and the universities in the US where he does archival research. Each location mapped is visited because of a nested series of motivations, including the need for resources (information, archival materials), space (for sitting, reading), and people (meeting with professors, fellow students, colleagues); to work, to eat, to access Wi-Fi, to have a place to land between classes when the commute to the university is long and it is not easy to get home in the middle of the day.

Think about the difference between a map of a university and the kinds of subjective representations of places and connections yielded by cognitive maps. Such maps reveal all the things we cannot see if we limit our observations to institutional spaces. The mapping exercises reveal that libraries are places within a network of places, institutions embedded in larger structures. Being aware of the wider context in which libraries exist can help us realize, for example, that solutions to problems that do not originate in the library cannot be offered only by the library and hope to succeed. If there is a general shortage of study space on campus, that might be revealed in the library, but might not be solvable by the library working alone, particularly on large university campuses where it can be hard for students to easily get back to the library from their lecture hall, on their way to another lecture or tutorial. If there is a problem with printing on campus, it may be particularly visible in the library (particularly when end-of-semester papers are due), but it is seldom possible for the library working on its own to solve that problem, either. Once we see the network, it is possible for libraries to call on other parts of the network to work towards a solution. But without seeing the network, it is too easy to assume that libraries exist in isolation, and have no resources beyond themselves to address problems, or to reach for new resources for new initiatives.

Ethnographic approaches to usability studies can draw attention to the ways that people think with tools, and address the need to attend to the play of the physical and digital together. In his work on embodied cognition, anthropologist Kirsh (2001) describes situations when 'we literally think with things'. Behavior studies can capture the moment when thinking occurs with (or is stifled by) things – with places, with tools, with websites.

People can often realize the potential of certain tools and resources only after they are using them. It is hard to think about what will happen in the abstract, when it is in fact the whole experience that is relevant. Asking people to think about 'the digital' or 'technology' and asking them to describe it as separate from their everyday lived

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reality ignores how integrated it is into their physical relationship with the world. When I interview students about technology, they spend very little time before switching over to talking about tasks, or people, or places. It is necessary to think about digital and physical places and tools together because that is how people experience them. Counting the number of students who have mobile devices, how many times laptops circulate from the library, or the number of hits on particular web pages does not capture this holistic experience of digital tools in physical places. Qualitative methods, some of them ethnographic such as observation and participation, can yield a holistic perspective, beyond whether something is either used, or indeed 'usable'. People perceive the world as a related whole, and institutions require techniques such as those in the ethnographic toolkit to reveal these perceptions, and make them part of the information available to help inform policy decisions.

ASKING QUESTIONS

In his discussion of learning spaces, Bennett (2007, pp. 14–15) points to the importance of persistently asking questions, and to careful attention to the actual practices of people in spaces, regardless of the intent that went into the design of spaces. One cannot mistake the intent of the architect for the actual behaviors that then take place in the places post-construction. Studying and other academic practices are embedded in particular cultural histories. Libraries are rife with con- trolling processes (Nader, 1997); they are cultural institutions infused with very particular senses of what scholarship and studying looks and sounds like, what the proper material environments are for such activities, and what resources should be provided by institutions (and what should not be). Rules around noise and quiet, consumption of food and drink, occupancy of space (When is the library closed? Does it close? Who is allowed in? Who is prevented?) are all performances of institutional control of library spaces. These rules are shot through with power: Who determines what is quiet? What is noise? Who makes the decision about who is allowed in the library?

Bennett's article treats questions as important, and does not assume they have easy answers. How might one answer them? Ethnographic techniques can be a part of the solution to that dilemma. It is important to keep asking questions, and in particular important not to presume you will always know the answer, and to involve lots of people in answering them. And keep (persistently) asking them. Questioning can be teaching as well as learning. Effective questions require knowledge beforehand. You have to know something about the situation on the ground before you start asking

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good questions, ones that will yield insight and paths to solutions and innovations. This is a pedagogy of questions, a way of teaching and learning by asking, by deliberately positioning oneself as not-knowing (Bruss and Macedo, 1985; Harouni, 2009, 2013; Stommel, 2014; White, 2014). An anthropological perspective is one that generates questions. And in the process of asking questions, we discover that it is more than a pedagogical practice, but an ontology – queries nested within other queries, things we do not know influenced by what we never found out.

Finding a voice in higher education depends in part on generating interesting questions. This is far more useful than telling people what they should do. An anthropological perspective is one that generates questions. Asking questions is crucial, as is accepting the fact that many of the answers we uncover are problems. Ethnographic techniques can be a part of that exploratory process, of figuring out what questions to ask, which ones might be answerable, which ones are important to follow up on. And it is in our accurate identification of problems that we can be truly useful. When people think that one sort of thing is 'wrong' their perceptions of why that situation has come to pass can be incomplete, or completely off-base. When some of the answers we provide are the outlines of problems, we are also creating space for identifying opportunities. Then we become truly worth listening to.

And the joy of it all is that we, for all the answers we offer, do not have to come up with solutions alone. That is the other part of what is at stake. Once people are listening to us, we can engage them as part of the solution, or many solutions. We no longer, in this scenario, have to be subjected to solutions imposed on us from without. We can generate solutions as a team, with our colleagues in higher education.

ANTHROPOLOGY AS A WORLDVIEW

Engaging with qualitative techniques provides chances to elicit and tell powerful stories. Quantitative techniques tend to reduce or hide complexities, and give us the impression that we can predict the future, that we can see where things will definitely go. The 'Library of the Future' has a strong pull, inspiring conferences, blogposts, articles, and even jobs with the title 'future' in them. Perhaps it seems to those talking about the future of libraries is that they are talking about the importance of libraries. The danger is that there is actually no accurate way to predict the future. Predicating library's argument for attention, resources, and influence on a nebulous future is potentially less effective than arguments grounded in what is, and the vivid potential of the current opportunities, in the present (Boellstorf, 2014).

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In anthropology, there is a long tradition of historical approaches to current cultural practices, and a similar tension between the desire to know what might come next, and the need to be grounded in current practices. Matti Bunzl (2004, p. 441) argues that effective anthropological approaches constitute a 'history of the present'. Anthropologists attempt via description and interpretation to represent the result of historical processes, to describe the product of prior processes, to get a picture of where we are now.

Deeply understanding the present of libraries and higher education can help us think more clearly about how we are limiting or facilitating a wide range of possibilities, not just the ones we think the numbers might be telling us. We can point to numbers as a supplement to a particular picture of reality. The decline in print circulation is a good example – that fact needs to be informed by the larger con- text, which is that people are still reading, just in electronic versions. The decline in print circulation may also point to print materials (particularly bound journals and monographs) becoming something that stays in academic buildings rather than going home with users. In interviews I have conducted with students about their research habits, it becomes clear that some of them are using print resources (e.g. books or article printouts) when they want to engage deeply with the material they are reading. Students and faculty alike who are reading something new or challenging often interact with their print resources: highlighting, taking notes on the page, flipping easily back and forth between points that are related. Individuals who have long public transportation commutes take advantage of the fact that print resources do not depend on battery life or Wi-Fi connections to be read. Preferences for electronic versions of resources can stem from concerns about expense (sometimes the resource is available in the library so they do not have to purchase it themselves) and also convenience (if it's available online they might not have to enter the physical building), to name just a couple of examples. Some individuals keep many of the resources they use in electronic form so that they can work with them wherever they are, without having to carry a lot of paper with them. Some individuals want the paper with them because their access to digital devices or spaces is unreliable. The point, from a library perspective, is that there is no universal pattern around the uses of digital or analog resources, because the everyday material conditions of people's lives mean that both modes are still necessary. Institutions should therefore continue to be prepared to offer both, even as they pay attention to innovations in digital resources that close the gap between what is possible on paper and what is possible on screens.

Cognitive mapping techniques can be used to reveal a broader picture of the learning landscapes of students and faculty. Such a picture can be used to inform libraries not

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just of what their place is in the workflow of the university community. Recognizing the non-library, non-institutional spaces in which people are doing academic work points to the need for policy solutions to institutional problems to go beyond local conditions. Sometimes library-located problems require larger systemic solutions. Sometimes university-evident problems require city-level solutions. Identifying the larger network allows for the opportunity to identify potential partners in working towards solutions.

This is not, therefore, simply an argument for libraries to engage with ethnography as a method, but ultimately for libraries to benefit from the perspective that comes from anthropology as a worldview. The holistic consideration of the nature of human behavior in academia, in society, can inform the whys and hows of university and library policies, spaces, workflows, and resources. Dourish and Bell (2011) call out ethnography as more than describing and defining bounded categories – it is about tracing, describing, identifying the processes, practices, and associations from which emerge the stuff of culture. Anthropology is invested in the interpretation of what is described, trying to understand the meaning of what has been uncovered in the course of practicing ethnography. Anthropological approaches to ethnography do not settle for descriptions of systems, but strive for explorations of meaning, interpretive acts that lead to insights, and frequently more questions.

ANTHROPOLOGICAL INSIGHTS AND STUDENT EXPERIENCE

When one person sees a library as a system, and the other sees it as an artifact, then there is a need to translate, to recalibrate the frames, so that a conversation, an engagement can happen, not just ineffective talking past one another. This is particularly important with regard to policy discussions. Insights derived from adopting an anthropological worldview should be just the start of a much larger agenda in libraries and higher education. Making systems and spaces navigable and legible is important if we take our mission of access seriously. Understanding why something is unnavigable or illegible in the first place takes a deeper understanding, and can lead to insights beyond design, to organization, culture, and process.

Think of the act of ethnographic description, the moment of anthropological insight, as a simultaneous act of deconstruction. It is theoretical, analytical, and transformative. Libraries need more than ethnographic methods, they need such practices to be informed by anthropological perspectives. For example, competence and incompetence are culturally constructed. Success within particular educational

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contexts – including universities and their libraries – derives directly from the level of participation within those contexts. Participation can mean a variety of things, and there is not necessarily one 'correct' way to participate. Universities are composed of interlocking communities of practice that students and faculty alike need to move among as they pursue their studies (Lave and Wenger, 1991). While all students are non-dominant in the hierarchy of higher education, some have more privilege than others, in terms of familiarity with higher education, as well as economically and socially. The implications for student practice, for students moving into university or library space without knowledge of practices of scholarly community are that these things can be learned, but are not 'natural' and are therefore the responsibility of educators, including library staff as well as individuals in traditional faculty roles.

Ethnographic techniques are methods that provide a way to connect the practices of students with the practices of academia (of the library, of their professors) (e.g. Bhatt, 2014). These methods can also reveal connections between the practices of faculty and those located within the library. And importantly, casting an ethnographic eye on the totality of student experience means that we can more easily reveal the locations where students cannot connect effectively to the places, resources, and practices of academia. Locating the moments where students have less access than they should to resources, less knowledge than they need to effectively use these resources, is a crucial service to the people who work at universities, and who are committed to educating citizens. Anthropological perspectives on academia provide opportunities for pause, reflection, and seeing how to emerge from that moment with new practices that are more effective at meeting needs and providing engagement.

Students socializing in the library are engaging in a form of what Lave and Wenger (1991) call 'legitimate peripheral participation' – moments where people hang back on the margins, see what is going on, or engage in a preliminary way with what they need to do. Chatting with friends in the library places students in a location where they can also witness studying all night for finals, poring over the archives in special collections, or writing a dissertation in a graduate student carrel. The practice of 'studying along' (Bennett, 2007), neither in groups nor solo, is a perfect example of an opportunity that students give themselves, in the comfortable network of their friends and classmates, to see and assimilate a variety of academic behaviors. We see revealed the importance of recognizing the socially embedded nature of studying, academic practice.

Students, much like faculty and other library users, engage in a variety of ways of defining 'quiet'. It rarely means silent, and often means still and focusing in a way

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that isn't entirely auditory. I have seen this in my own fieldwork in the US and the UK. Students define libraries that are unfamiliar to them as 'quiet' in large part because there are no people there who know them, and so they are relatively undisturbed (regardless of actual noise level). In other cases any noise at all being made by unknown people is cast as a disturbance, because individuals do not recognize what 'those people' are doing as studying. The social dimensions of learning, the fact that study behaviors are embedded in larger cultural contexts, in class, in race, in gender – these are all things to consider and to ask about when confronted with something like the Noise and Quiet debate in libraries.

Social and cultural contexts of learning apply to both physical and digital places. It is therefore important for us to understand the motivations not just for engagement with physical places and services, but also behind people's persistent love affairs with digital (non-library) places and resources such as Google and Wikipedia. I have, in the course of several research projects (e.g. Visitors and Residents, see Connaway, White and Lanclos, 2011; Connaway, Hood et al., 2013; Connaway, Lanclos and Hood, 2013) interviewed more than one undergraduate who called Google a 'best friend'. Libraries don't run Google (more's the pity, financially). Our institutional lack of control over the web interfaces that our com- munity members use the most means we need to think about usability of systems that are not local, as well as the ones that are. The usability implications include personnel and workflows – if we know the library website needs to be changed, who do we have to do it? If we do not have control over all of the web environments that patrons engage in, what are the implications? How can we make the leap from describing problems to designing solutions? The key here is that we may find answers through our investigations. But we cannot work alone towards solutions. Finding solutions has to be a collaborative endeavor.

CONCLUSIONS

Because problems do not have one particular solution, and because innovation rarely comes from homogenous environments, collaboration is the key to successful solutions to the problems and opportunities identified by ethnographic observation and description, and anthropological analysis. Multiple disciplines, multiple people should be working together within libraries, enriching the policy decisions and grounding them in a rich context of information and meaning (e.g. Delcore et al., 2009). We cannot and should never expect one person to contain all of the expertise necessary for these multidisciplinary efforts; all of these things require expertise, they are proper jobs in themselves, and they deserve the respect of full-time work.

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Anthropological insights do not necessarily flow directly from the gathering of observations of UX or ethnographic data of other kinds. Training and expertise should not be taken lightly. When qualitative researchers are brought in as consultants, there is some pressure to please customers, however much we researchers might value our potential role as provocateurs. When anthropologists and other social scientists are hired full-time in libraries, we are colleagues, and our provocations, our awkward questions, our explorations of issues and patterns that are not immediately related to problems at hand are in service of the greater good. We are invested in the organization, we want our work to contribute long term, we have the time, the bandwidth, the organizational support for trying and failing and occasionally going into dark corners that people don't habitually visit.

UX, ethnographic practices, and anthropological insights should all be just the start of a much larger agenda in libraries and higher education. The act of ethnography, the interpretive lenses that anthropology can inspire, can help us fight agendas that are destructive to that educational project – being deeply embedded in the behaviors and in the lives of our students and our faculty can refute the vocational narrative of neoliberal educational policy. It is crucial that libraries contribute alternatives to notions of education that cast the role of universities as places that 'get people jobs'. The people who make up our institutions are more than a list of certifications, more than the money they might make, far more than the boxes they tick off as they work through their course modules in pursuit of their major. Those people are revealed with qualitative research. Their stories move policy makers. We do not have to take policy makers' word for it. We do not have to take conformity to web templates lying down.

We do not have to believe them when they tell us that students no longer read, or will only communicate via text, or have lost the ability to think critically. We can push back, and point out the explosion of different kinds of reading, of all the different places where communication happens, that it's our responsibility to model and teach critical thinking, not just assume that it will show up as they arrive on campus. We can leverage our grounded sense of the lives and priorities of people to make effective arguments, to drive our own agenda.

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CHAPTER

3

INFORMATION LITERACY IN THE DIGITAL ENVIRONMENT

This chapter is excerpted from

University Libraries and Digital Learning Environments

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INFORMATION LITERACY IN THE DIGITAL ENVIRONMENT

By Jacqui Weetman DaCosta

Excerpted from *University Libraries and Digital Learning Environment*

INTRODUCTION

This chapter will explore the role of information literacy within the digital environment. The concept of information literacy predates the 'digital age' but, like other academic library resources and services, it has embraced (and been embraced by) the digital environment.

There can be many reasons why an institution may turn to the digital environment as a medium for developing students' information literacy skills, and some of these are discussed in this chapter. examples will be reviewed of the opportunities for information literacy development in academic libraries and the varied ways in which these are practiced in digital learning environments.

One of the most often quoted reasons for using digital initiatives to develop information literacy skills and support students' learning needs is the comfort level of in-coming generations with technology. Whether they are called the google generation, millennials or digital natives, it is commonly felt that they bring different skills and expectations to their academic studies. An interesting report was produced by the Centre for Information Behaviour and the Evaluation of Research (CIBER) Group at University College London in 2008. *Information Behaviour of the Researcher of the Future* (CIBER 2008) outlines the results of a study, commissioned by the British Library and the Joint Information Systems Committee (JISC), on how young people search for information and what libraries may need to do to support their research needs. the report states that, when using digital information, the behaviour characteristics of our in-coming students are:

- Horizontal information seeking – skim reading and not staying with one document for very long
- Navigation – where people spend as much time locating information as they do reading it
- Squirreling – storing downloads without necessarily reading the information
- Speed checking – assessing authority and establishing trust in a matter of seconds.

The report lists some themes, with which many librarians are all too familiar:

- the information literacy of young people has not improved with the widening access to technology: in fact, their apparent facility with computers disguises some worrying problems

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- internet research shows that the speed of young people's web searching means that little time is spent evaluating information, either for relevance, accuracy or authority
- young people have a poor understanding of their information needs and thus find it difficult to develop effective search strategies
- as a result, they exhibit a strong preference for expressing themselves in natural language rather than analyzing which key words might be more effective. (CIBER 2008, p. 12)

These sentiments were echoed by Lynne Brindley (2009a), Chief Executive of the British Library and a former university librarian, when she said 'Google generation students are technologically savvy but not digitally literate'.

DEFINITIONS AND STANDARDS

Opinions differ as to the origins of the concept of information literacy. this debate ranges from its inception in 1876, 'when Melvil Dewey urged librarians to become educators' (Zhang 2001, p. 141), to the 1980s, when Bloom and Deyrup (2003) felt that it was only with the advent of the internet that information literacy was truly born. It is said that Paul Zurkowski was the first person to use the term 'information literacy' (Webber and Johnston 2000), in the 1970s, in his proposal to the US National Commission on Libraries and information science. it appears that national debate on the subject first came into prominence in the United States in the late 1980s, Australia in the early 1990s and the United Kingdom in the late 1990s.

The American Library Association (ALA) was the first professional body to produce an agreed definition of information literacy in its 1989 Presidential Committee on Information Literacy. This Final Report (ALA 1989) said that an information literate person is one who can:

> ... recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.

For many years, this was the definition used within the United Kingdom until a group of information literacy devotees, mainly from higher education libraries, got together to produce a definition for the Chartered Institute of Library and Information Professionals (CILIP). This definition went a step further by incorporating the ethical use of information, stating that:

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> Information literacy is knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner (CILIP 2004).

Initially, it was the society of College, national and University Libraries (SCONUL) that started promulgating the information literacy 'cause' in the United Kingdom when they convened a task force on the topic in 1999. This task force produced the 'Seven Pillars of Wisdom model' (SCONUL 1999) which outlined the relationship between information and IT skills and their potential progressive development within the higher education curriculum. many higher education institutions have made use of the model as a way of providing a framework or benchmarks for information literacy development and assessment (DaCosta 2009). even though the SCONUL model for information literacy has experienced widespread acceptance within many British academic libraries, and is known internationally, it has not yet achieved the level of 'clout' of the Association of College and research Libraries' information Literacy Competency standards for Higher Education (ACRL 2000) in the United States. These standards are used by many American academic libraries for assessment and accreditation. However, it is thought that they are a little over-complicated and do not translate so easily for working with academic staff (Gullikson 2006).

While 'information literacy' is well documented, 'digital literacy' is a newer concept, on which there is less written. David Bawden offers a review of both concepts, along with others such as media and computer literacy, in an article from 2001. Definitions of 'digital literacy' focus more on the medium and the fact that required skills include the ability to decipher images and sounds, and to understand multimedia texts. However, it could be argued that digital literacy skills, along with many other literacies brought about by the widespread use of technology, are already accounted for in characteristics of information literacy listed by recognized scholars in this area, such as Christine Bruce (1994) and Hannelore Rader (1991). Digital literacy could simply be defined as the ability to perform information literacy tasks within a digital environment. As Bawden (2001, p. 251) concludes:

> it is not of importance whether this is called information literacy, digital literacy, or simply literacy for an information age. What is important is that it be actively promoted as a central core of principles and practice of the information sciences.

Moreover, as written in Barack Obama's (2009) Presidential Proclamation on Information Literacy:

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Rather than merely possessing data, we must also learn the skills necessary to acquire, collate, and evaluate information for any situation ... The ability to seek, find, and decipher information can be applied to countless life decisions, whether financial, medical, educational, or technical.

> Information literacy skills are core to lifelong learning and need to be developed to equip students to manage information in whatever format it is presented.

TEACHING

Increasingly, information literacy skills are being taught and supported within the digital environment, whether it is through the use of online tutorials, virtual learning environments or blended learning. The digital environment presents many opportunities to develop students' information literacy skills and may be chosen to support distance learning, to provide 24/7 tuition, to make learning more interactive or simply because the course leader does not want to hand over much of their class time to the library. Whatever the reason, it is down to the librarian to ensure that the information literacy teaching remains pedagogically sound, regardless of the medium.

Many librarians have looked to online tutorials as a means of providing 24/7 instruction and to appeal to the different learning styles of the google generation. some academic libraries have created online tutorials because they are a good thing to have but others have responded to circumstances within their own institutions, for example to provide information literacy teaching in areas where they are not invited into the classroom. Some libraries have developed subject or task specific tutorials, such as citation or plagiarism. some tutorials serve as the course material where assessment may be involved. However, many are generic in nature and can easily be utilized or customized to suit the needs of other institutions.

If one is looking for ideas on the types of tutorials available or to try to find one to customize, there are some good places to start. Firstly, there is a book which provides a guide to the state of this particular art as it stood in 2007. *Information Literacy Programs in the Digital Age: Educating College and University Students Online*, compiled by Daugherty and Russo (2007) provides details of 24 tutorials from American colleges, across the spectrum of general, subject specific, credit- bearing and those embedded into courses. For a more regularly updated resource, librarians could consult the Primo1 database, which stands for Peer-reviewed instructional materials online and is produced by the instruction section of the ACRL. tutorials and

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other online materials are reviewed twice a year, with the most exemplary being selected for inclusion in the database. a similar resource, although not limited to just library instruction and materials, is MERLOT[2] (Multimedia Educational Resource for Learning and Online Teaching). This is an ever-growing collection where a keyword search can be used to find materials related to information literacy or library skills in general, and sub-divided by subject area, if desired. Materials sourced could be online tutorials, quizzes and tests, presentations or reference materials.

Many librarians have taken the opportunity to incorporate library resources and support within their institutional virtual learning environments (VLE), known as course management systems (CMS) in the United States. Some libraries have only been able to add links to resources, or contact details for subject librarians, but others have been able to develop information literacy instruction, some within credit-bearing courses. it all depends on the level of control exerted by institutions over their VLE content, or sometimes just being in the right place at the right time. DaCosta and Jones (2007) describe how they were able to take the opportunity of De Montfort University's adoption of Blackboard to turn a previous classroom based course into one where much of the learning and assessment transferred into the online environment. Jefkins (2009) recounts how Moodle was used at University College London to supplement the library's other information literacy efforts. Where librarians have only been able to link to resources, many have taken advantage of Intute's virtual training suite3, funded by the Joint Information Systems Committee (JISC), in order to provide quality web materials. Sadly, at the time of writing, the future of Intute beyond August 2010 is unknown and it may need to become a subscription-based service.

ASSESSMENT

The digital environment has provided one of the biggest ways forward for the assessment of information literacy. When librarians are only offered a small amount of time within a course to work with students on information literacy, they have not always been able to allocate much of that time to assessment. the assessment of information literacy skills is desirable to test whether students are learning anything from your teaching or to inform you as to which teaching methods work best. However, in some institutions, it is required for accreditation or quality assurance purposes.

The number of commercial assessment packages is increasing at a steady pace. some form part of general institutional assessment management software, while

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others have been designed to focus on library and/or information technology skills. the downside, for British academic libraries, is that many of these have been developed by American companies or libraries. While the skills to be tested do not differ across the Atlantic, the terminology does and librarians may have a harder time convincing managers of the value of these packages. The most popular of the commercial packages within the United States are SAILS, TRAILS and iSkills.

- Project SAILS[4] was launched in 2001, by the Kent state University in Ohio, USA. their team of librarians, test designers, data analysts and programmers produced a standard assessment of information Literacy Skills (SAILS) in 2006. The test measurements used are based on the ACRL information Literacy Competency standards for Higher education. The tests, in the form of multiple-choice questions, are available online or on paper and are charged at a per student rate.
- TRAILS[5] (Tool for Real-time Assessment of Information Literacy Skills) is another initiative out of Kent state University and was also made available in 2006. it is aimed more at school libraries but has had some success in community colleges in the United states, which are comparable to British further education colleges. The multiple-choice questions are based on standards produced by the American school Librarians' association and Ohio State. TRAILS is free to use but has limited flexibility for customization.
- The iCritical Thinking Certification[6] replaced iSkills in late 2009. Both tests were developed by the American Educational Testing Service (ETS), which is perhaps better known in the United Kingdom for the problems associated with the administration of SATS, or the national curriculum tests, in 2008. The previous iSkills test was criticized by some librarians for having too great a focus on information technology. However, this does make it more appropriate to the digital environment (Katz 2007). Rather than being based on the ACRL information Literacy Competency standards, the iCritical Thinking test is described as being 'aligned to' the standards. There is a fee per student to administer the test.

Although the commercial products can help save time and provide a professional looking packaging of assessment results, they are prohibitively expensive for many academic libraries. some librarians have turned to their institutional virtual learning environments to provide an assessment platform (DaCosta and Jones 2007). While this requires a lot more preparation up-front, it can easily allow for customization to fit the course's information literacy learning outcomes. In the absence of a VLE, it is perfectly possible to take advantage of open source software to create assessments, such as Google Docs or SurveyMonkey7. the most challenging aspect of creating your own assessments is devising appropriate questions. The British Information Literacy

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Group, which is one of the CILIP Special Interest Groups, has been talking about developing a centralized bank of questions that would be suitable for the testing of information literacy skills. At the time of writing, this is just in the aspiration stage. However, at the time of reading, it may have become a reality so it would be worth checking their website.[8]

LEARNING STYLES

Whether or not information literacy is developed and supported in the digital environment, librarians should always pay attention to the diverse learning styles of students. many librarians share the learning style associated with reading and writing (an occupational hazard!). However, when we are teaching Art or Engineering students, it is unlikely that they are going to respond well to that same style. We have to climb out of our comfort zones to deliver our teaching in a range of styles and this is where the digital environment can help. remember:

- We are all different learners.
- We are all different information gatherers.
- We receive information in different ways.

Much has been written on learning styles over the years covering theories and questionnaires for individuals to discover their own styles (Honey and Mumford 2006, Kolb 2005). There are many different names associated with the most commonly discussed styles but, simplistically, they boil down to four main types:

- Visual – preference for pictures, colour, graphics and videos. these learners may take lots of notes.
- Auditory – preference for lectures, podcasts and audio books. These learners take few notes.
- Read/Write – preference for reading lines of text and taking lots of notes.
- Kinesthetic – preference for activities and problem-solving. these learners take lots of notes.

Learning styles have been a topic for discussion and research long before the google generation came along. their arrival has provided more challenges.

Whereas lecture appeals to auditory learners, hands-on activities reach kinesthetic or experiential learners. Lecture may be very appropriate for older students; however, students in gen y may prefer hands-on activities (Willis and Thomas 2006, p. 438).

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The arrival of these students is one of the reasons why librarians have turned to online tutorials as a way of incorporating more hands-on activities into information literacy instruction. Whereas many librarians may prefer to teach and provide information in a linear structure, today's students are more inclined to want to dart from one thing to another, spending little time on something that does not give them immediate answers. For this reason, a variety of digital media and formats may be more appealing to students looking for information.

Another characteristic of the google generation is that they have a great deal of confidence in their ability to do things on their own (Foster and Gibbons 2007). This confidence is thought by many educators to be overestimated and misplaced. Today's students are less likely to learn their information literacy skills at the enquiry desk or at a voluntary workshop, since they are less inclined to think that they need help. For this reason, librarians need to take advantage of any and every opportunity to help students to develop their information-seeking skills, and particularly utilize the opportunities presented by the digital environment.

WEB GUIDES

Gone are the days when libraries provided numerous guides and instruction sheets on row upon row of display shelves. the google generation does not consist of many students who like to sit and work laboriously through written instructions to find out how to use a database. This is the trial and error generation – if something does not work immediately then they move onto another method very quickly. If today's students want to know something, they do not look for a printed guide, they go online and 'Google it'. If you have managed to get your message across, as their librarian, then your students may turn to your web pages for guidance on using library-related resources. At Wartburg College in Iowa, they talk about using the library website to provide 'stealth instruction' (Gremmels and Mashek 2007, p. 261), acknowledging that just as much thought needs to go into planning the content and desired learning outcomes of information on the Web, as when creating a lesson plan.

In keeping with the range of learning styles discussed above, guidance to students via library web pages is often provided in a variety of formats: iPods or MP3 players can be used for audio tours; podcasts can be used to give short explanations on procedures; interactive tutorials can be used to get students practicing research skills. In 2008, the University of Huddersfield Library developed a website called *The Basics*[9] in order to convey induction information to students in short FAQ style,

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utilizing podcasts, Adobe Captivate demos, tutorials, graphics and hypertext links. Many libraries have responded to the students' need for immediate gratification by providing chat reference services, via instant messaging.

Many academic libraries in the United States have chosen to make use of LibGuides, which are provided on a Web 2.0 platform and are easy to create. they allow for multimedia content to be incorporated, as well as widgets and applications compatible with Facebook, Twitter and other social networking software. many American libraries have chosen LibGuides for their general and course specific guides, websites and portals, and also for library instruction. The ease with which they are created has encouraged librarians to prepare a guide, rather than a handout, to supplement teaching and to even add to the guides during class sessions. LibGuides are hosted on a server controlled by Springshare, which is an advantage to libraries that are unable to access their own institutional server. there is a small annual fee charged for this service, customization and support.

As well as discarding printed library subject guides, students are also turning to the internet for their citation referencing. they are not choosing to access guides to help them create their own citations but the even easier option of having the citation put together for them. regardless of their accuracy, students just want the quick fix offered to them by sites such as: BibMe[10], EasyBib[11], Son of Citation Machine[12] and Neil's Toolbox[13].

LEARNING, FUN OR BOTH

The digital environment presents more opportunities for students to experience the lighter side of learning through interactive games and social networking. increasingly, librarians and instructors are using digital initiatives in the hope that students will engage more deeply in their learning, if they find the medium to be fun.

Sheila Webber, at the University of Sheffield, Esther Grassian, at the University of California Los Angeles, and professors at the graduate school of Library and information science, University of Illinois, have done a lot of experimentation with information literacy within second Life – the 3d virtual world used for socialization and making connections. An Infolit iSchool has been created in Second Life, which is used with students at the University of Sheffield's department of information studies and as a discussion forum for librarians from around the world. There was even an Information Literacy Week in Second Life, in November 2009, for which a blog was created, which has continued as a forum for discussion on this topic.[14]

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Manchester Metropolitan University (Whitton and Jones 2009) have been experimenting with Alternative Reality Games (ARGs) as a supplement to traditional library induction and to introduce students to resources. ARGs are collaborative, problem-based computer games that utilize blogs and other social networking software, which makes them much easier to develop than the typical high-tech computer game. The focus on problem-based learning makes them more suitable for the educational sector. the ARGOSI Project, at Manchester metropolitan University[15] did not determine that games of this nature should replace traditional teaching but that they could serve as a complement to engage students, who prefer this style of learning.

Some libraries have created YouTube videos to help teach information literacy skills to students, using these in classes or uploading them onto websites. Whilst the educational benefits of YouTube are still up for debate, this medium appeals to some students and is always worth trying as another digital enhancement to traditional teaching methods (Ayres 2008).

No-one is yet claiming that information literacy teaching is more effective within a virtual world but many are having fun experimenting with this form of learning without the real-life limitations of budget constraints or room availability!

STAFF DEVELOPMENT

One of the most common complaints about library school courses around the world is that they do not prepare librarians adequately to teach information literacy skills. Many librarians just pick up what they can, doing the job and observing colleagues. Some librarians opt to take extra courses to learn the skills or benefit from in-house programs. However, training for library staff to learn more about information literacy, and to equip librarians to teach the skills, is now available courtesy of the digital environment. the UK's information Literacy group has developed two online training packages:

- Lollipop[16] is an online tutorial that aims to enhance the information literacy skills of library enquiry desk staff. Tutorials have been developed for the Higher education sector and are available under the Creative Commons License.
- SirLearnalot[17] – is an online tutorial and discussion forum to help develop librarians as teachers, with units on Understanding Learning and the tools for Learning. it is freely available through the information Literacy group's Moodle site and, at the time of writing, is a work in progress. General users can log-on as guests.

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Cardiff University has produced an excellent Handbook for Information Literacy Teaching (2009), which is available from their website under a Creative Commons License. This handbook is especially useful for new and inexperienced teachers of information literacy since it covers many aspects of teaching from the planning stage through to activities to engage students, assessment and evaluation.

NATIONAL DIGITAL INITIATIVES AND INFORMATION LITERACY

As many librarians know, information literacy has been woefully neglected by British governments despite its role within education. Perhaps the greatest success story has been in Scotland where the Scottish information Literacy Project[18] has captured the attention of more 'movers and shakers'. At the time of writing, the project team based at Glasgow Caledonian University have almost completed a National Information Literacy Framework, which transcends primary, secondary and tertiary education by also encompassing lifelong learning.

Information literacy is in danger of becoming the overlooked Cinderella of the literacies, as government and other national agencies pay attention to the more 'sexy' digital and media literacies. The much-heralded Digital Britain (DCMS 2009) report mentions media literacy and basic literacy but does not talk of information literacy despite the fact that CILIP made a formal response to the draft report outlining the importance of information literacy. information literacy did fare better in the JISC report on Higher education in a Web 2.0 World (Melville 2009) but then the Committee of Inquiry into the Changing Learner Experience, which produced it, did include a librarian. this report commends how Web 2.0 tools help to enrich the educational experience because of their association with active learning. However, as with the CIBER report from 2008, it recognises that students look for a quick fix when searching for information, paying little attention to evaluation and ethical issues:

> It has also led them to impatience – a preference for quick answers – and to a casual approach to evaluating information and attributing it and also to copyright and legal constraints. (Melville 2009, p. 9)

The report recommends that:

> HEIs, colleges and schools treat information literacies as a priority area and support all students so that they are able, amongst other things, to identify, search, locate, retrieve and,

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> especially, critically evaluate information from the range of appropriate sources – web-based and other – and organise and use it effectively, attributed as necessary, in an appropriate medium. (Melville 2009, p. 10)

As governments across the world start to show an interest in the digital environment, and its role within education, librarians should take the opportunity to emphasise the role of information literacy within the digital environment and the importance of the associated skills.

CONCLUSION

We live in an ever-changing world, which means that we must remain vigilant to the needs and demands of our users. the format in which information is presented, continues to change at an alarming pace. because of this, students need information literacy training now more than ever. the proliferation of information that is available within the digital environment has generated a greater need for information skills. Our in-coming students generally:

- assume that search engines understand what they are looking for, without any regard for developing an effective search strategy;
- find the likes of Google and Yahoo to be a great deal more intuitive than many library websites;
- think that they are expert information searchers.

In order to combat this, librarians need to look at ways in which their web pages and library catalogues can be simplified. If instructions are needed on how to search the OPAC then the battle is already lost. the information that students need should be displayed prominently and in basic terms. there needs to be some bait to lure students and create a desire within them to spend a little more time using the library resources. Some libraries have turned to games, social networking and entertainment as a way to entice and motivate students. However, these need to continue to be evaluated for their pedagogical benefits:

> if the erratic behaviour we are seeing in digital libraries really is the result of failure at the library terminal, then society has a major problem. information skills are needed more than ever and at a higher level if people are to really avail themselves of the benefits of an information society. (CIBER 2008, p. 32)

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Project information Literacy is an American study on students' information- seeking behaviours, competencies and challenges faced when conducting research in the digital age. their interim report How College Students Seek Information in the Digital Age (Head and Eisenberg 2009) found that:

- Almost all of the respondents relied on the same few information resources regardless of the context.
- Students favored sources that provided brevity, consensus and currency.
- About 80% of the students surveyed did not consult a librarian for help when doing course-related research.

Librarians need to be aware of these additional challenges posed by the google Generation and work even harder to convince them of the importance of information literacy and the wider context of information resources.

Librarians, who have been around since before the Internet, know that students have always required instruction in order to formulate search strategies, develop keywords and evaluate sources. This has not changed just because more of the information is now available electronically. Students still require the training but librarians now have the additional option of providing instruction and guidelines in digital format. We need to continue to research the learning styles and preferences of our students, and to keep a watchful eye on what is working and what is not. Many librarians have fallen into the trap of thinking that they know what their users want without actually doing the research. Talk to students, survey them, and conduct focus groups and usability testing:

> the digital age offers huge opportunities, but the decline of information literacy skills risks robbing a generation of the ability to fully utilize these. (Brindley 2009b, p. 3)

Librarians need to work harder than ever to ensure that students of the 21st century are equipped with the information literacy skills to make the best of what the digital environment offers them.

NOTES

1. www.ala.org/ala/mgrps/divs/acrl/about/sections/is/projpubs/primo/index.cfm.
2. www.merlot.org/merlot/index.htm.
3. www.vts.intute.ac.uk.
4. www.projectsails.org.

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5. www.trails-9.org.
6. www.certiport.com/iCriticalThinking.
7. www.surveymonkey.com.
8. www.informationliteracy.org.uk.
9. www.2.hud.ac.uk/cls/thebasics/index.php.
10. www.bibme.org.
11. www.easybib.com.
12. http://citationmachine.net.
13. www.neilstoolbox.com.
14. http://infolit-week-in-sl.ning.com.
15. www.argosi.playthinklearn.net.
16. www.lobelollipop.com.
17. http://courses.informationliteracy.org.uk/course/view.php?id=13.
18. www.gcal.ac.uk/ils.

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CHAPTER

4

BUILDING USEFUL VIRTUAL RESEARCH ENVIRONMENTS

THE NEED FOR USER-LED DESIGN

This chapter is excerpted from

University Libraries and Digital Learning Environments

Edited by Penny Dale, Jill Beard and Matt Holland

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BUILDING USEFUL VIRTUAL RESEARCH ENVIRONMENTS

THE NEED FOR USER-LED DESIGN

By Melissa Terras, Claire Warwick and Claire Ross

Excerpted from *University Libraries and Digital Learning Environment*

INTRODUCTION

Recent developments in online resources have led to the establishment of virtual Research Environments (VREs): suites of applications, services, and resources which aim to enhance the research process by aiding scholars to carry out a range of complex research activities. The definition and concept of what constitutes a VRE continues to evolve, as developers attempt to create flexible and adaptable frameworks of resources to support both large and small scale research across a variety of disciplines. VREs are often integrated with digital Libraries and virtual Learning Environments (VLEs), to allow users to analyse and manipulate existing digital research data.

The construction of a VRE is a lengthy and costly process. given their experimental nature, it can be difficult to define user requirements, and to create tools which are actually required, or useful to the communities they are supposed to support. Therefore, to ensure the success of VREs, it is essential that developers liaise closely with the user community they are providing services for. this chapter will discuss the potentials inherent in VRE technology, whilst addressing the relationship that such environments have to their users. a case study involving the Joint Information Systems Committee (JISC) funded Virtual Research Environment for Archaeology (VERA) project will be presented to demonstrate that close integration with the relevant community is crucial if a VRE is to provide computational tools that reflect research practice.

As with the development of any computational system which is created to aid existing processes, the integration of user feedback into the VERA development process was key to its success. This chapter will focus on the integration of user led design and evaluation in the VERA project, demonstrating the complex nature of creating VREs. although this chapter will concentrate on tools created for the archaeological community, issues of user led design, user feedback, and user needs analysis are applicable to the development of VREs for any discipline. these steps should ensure that the limited resources available for creating online digital environments to aid research processes are used effectively. VREs (and other digital resources such as Digital Libraries and VLEs) will only be a successful approach to facilitating scholarly activity if they are developed with consideration for their potential communities. this chapter aims to stress the necessity of including users into a systems design process, whilst highlighting opportunities that exist for librarians to become more involved in the creation, management and curation of VREs and their related research data.

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VIRTUAL LEARNING AND VIRTUAL RESEARCH ENVIRONMENTS

Towards the close of the 20th century, software systems designed to support teaching and learning emerged within the Higher education community. many institutions began to investigate the provision of an array of online tools that, although originally created for distance education, increasingly supplemented traditional classroom activities. systems for online communication with students, course administration, provision of lecture notes and reading lists, collection and return of coursework, assessment, generation of student feedback, and the creation and maintenance of class content became commonplace (JISC 2002). Featuring emergent Internet technologies such as blogs, wikis, and online forums, these Virtual Learning Environments (VLEs), as they commonly became referred to (although a standard definition is still elusive) became commonplace across university campuses. Many of these VLE technologies (for example, Moodle, Sakai, or Blackboard) linked to institutional resources, such as the university library, becoming part of the teaching and learning framework. By 2005, 95% of Higher education institutions within the UK had invested in some type of VLE technology, 50% of which linked to the library catalogue in some way (Jenkins et al. 2005).

Universities are not only seats of teaching and learning, however, as a large part of academic activity is focused on research, and the systematic investigation of all aspects of science and culture. the rise of internet technologies, and the development of related online databases and tools, are changing academic approaches to research:

> A revolution is taking place in research. It is fueled by the ever-increasing sophistication of the e-information universe and by rapidly advancing ICT capabilities. this new generation of research, e-research, is epitomized by its collaborative, multi-disciplinary nature, the increasingly huge volumes of data it processes and generates, and the advanced infrastructure that enables the sharing of vast amounts of computer power and storage. (Wusteman 2008, p. 40)

This has inevitably led to proposals and attempts to create technologies which would specifically facilitate the research, as well as the learning, process:

> ... the new [technological] developments are making the process of carrying out research more complex and demanding. the aim of a virtual research Environment (VRE) is to help researchers

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> manage this complexity by providing an infrastructure specifically designed to support the activities carried out within research teams, on both small and large scales. (JCSR VRE Working Group 2004, p. 1)

> A VRE shares more in common with a managed Learning environment, that sum of services and systems which together support the learning and teaching processes within an institution. the VRE, for its part, is the result of joining together new and existing components to support as much of the research process as appropriate for any given activity or role. (Fraser 2005)

Although the term VRE is yet to reach a 'mainstream academic community' (Dunn 2009), it has been adopted to cover a range of technologies, and can be both fluid and vague:

> As the name virtual research environment implies, the aim is not to build single, monolithic systems, but rather socio-technical configurations of different tools that can be assembled to suit the researchers' needs without much effort, working within organisation, community, and wider societal contexts. (Voss and Proctor 2009, p. 183)

VREs aim to support collaboration, encourage multidisciplinary research, allow the use (and reuse) of data, and facilitate the research environment. They aim to provide an integrated environment that supports the work of research communities. it is worth noting that often:

> Digital libraries lie in the heart of these technologies, acting as an information grid that consists of a collection of resources for learning and teaching, data repositories for research purposes, or as archives of diverse cultural heritage materials. (Sim et al. 2006)

It is therefore important that those involved in digital Libraries are aware of the growing interest in VREs within the university sector, and address what this means for both the user wishing to undertake research as part of a VRE, and the information professional providing digital information to populate such environments, or encourage their use and uptake.

Much talk regarding VREs is at a relatively high level: VREs do not have as defined a

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set of tasks, or resources, as their VLE counterparts. Whilst VLEs are often identifiably similar, VREs can differ widely in their requirements depending on which research task they are supporting, and therefore each VRE can be highly individual, depending on bespoke technology (Van Till 2009). Furthermore, much technical work has to be undertaken on drawing together heterogeneous data sources, and allowing access to datasets that were never designed to work in parallel together. there are procedural, technical and even philosophical challenges which need to be addressed together to allow the creation of aVRE:

> In parallel to the piloting, investigation and scoping of VREs there is convergence on multiple fronts whether it is the evolution to an all-encompassing e- framework, agreed portlet standards, integration between institutional portals, VLEs and emerging VREs, or more generally the gradual acceptance of open standards, open source software and open access. (Fraser 2005)

A report by the UK JISC was commissioned in 2004 to create a roadmap for the development of VREs across the Higher Education sector (JCSR 2004). This called for the development of technical frameworks to facilitate VRE technologies, whilst liaising with the related research communities to build research environments which met users' research needs. Later that year, JISC established a virtual research environments Programme1 which aimed to investigate, build, and deploy VREs, whilst assessing their benefits and shortcomings, identifying the need for the development of new tools, and improving and extending the usefulness of VRE tools for UK researchers. 14 VRE projects were initially funded across both the arts and humanities[2] to explore the definition of and technological solutions for VRE in research in the UK. in 2007, four pilot projects were funded to implement VRE in Phase 2 of the JISC programme[3]. in 2009, ten VRE projects were funded to focus on tools, frameworks and interoperability.4 it is hoped that this strategic investment will stimulate a change in research practices through the development of VRE solutions, which could be extended and exploited across the Higher education community.

USERS OF VRES

Although there are great technological challenges in designing standards and frameworks to allow the creation of VRE technologies (covered more fully in Allan 2009), of primary interest to those providing service level assistance to VREs are the needs of those undertaking the research, and potentially using VREs to further their

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own study.

The extent to which a VRE can be used by specific users to achieve specified goals with effectiveness, efficiency and satisfaction is largely driven by the requirements of the user. Hence user requirements study plays an important role (Sim et al. 2006).

Given the experimental nature of VREs, it can be difficult to define user requirements, and to create tools which are actually needed, or usable by the communities they are supposed to support. To do so requires close integration with the user community in question, and it is here that the focus of VREs changes from high level pronouncements of what the technology should do, to detailed requirements analysis of what a user community actually needs in order to carry out research:

> The development and presentation of a VRE must be embedded and owned by the communities served and cannot realistically be developed for the research communities by others in isolation. since the intention is to improve the research process and not simply to pilot technologies for their own sake, the research must drive the requirements. Undertaking a 'day in the life of your research' can be instructive and, if nothing else, will generally hammer home the point that the majority of the research community operate in a world which mixes the digital with the tangible, machines with people. in effect, the development of VREs should encourage research communities to be inward looking, reflecting on the types of research questions, the means to address them, and the acceptable ways of disseminating the answers. Understanding and articulating the research methods and culture of any given research area is key to developing a VRE. (Fraser 2005)

The interdisciplinary nature of the research, and the computational nature of the online tools themselves, mean that user needs have to be articulated to computer scientists designing the systems:

> VREs have the potential to be profoundly multidisciplinary, both in their use and in their development. For the most part, it is expected that computer science will act in partnership with other disciplines to lay the foundations, integrating methods and knowledge from the relevant subject areas. Humanities scholars,

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> for example, cannot necessarily be expected to apply tools and processes (initially developed for the e-science community) effectively to their own subjects. better to articulate the challenges and methods and sit down with the computer scientists. this is not an alien idea for many in the humanities – there is a long history of such partnerships. indeed, while the humanities and social sciences may not have the scale of data to contend with, they certainly have the variety and complexity of data to continue to provide interesting problems for computer science and engineering. (Fraser 2005)

However

> Despite an increasing interest in VRE ... there is a lack of understanding of the extent of adoption, factors that influence their adoption, how they are used, and the implications for scholarly communications (Voss and Proctor 2009, p. 181).

It is up to each individual project to engage with users successfully, and to integrate the potential that VRE technologies display with existing working practices. The following section will use as a case study a project funded under the JISC VRE Phase Two Programme, which provided backing to produce pilot VREs. The VERA project aimed to produce a fully-fledged VRE for the archaeological community. By addressing user needs, enhancing the means of efficiently documenting archaeological excavation and its associated finds, and creating a suitable Web portal that provided enhanced tools for the user community, VERA aimed to develop utilities that encapsulate the working practices of current research archaeologists unfamiliar with VREs, enhancing their research activities, and facilitating the creation of new knowledge from the available data. To do so, it was necessary to engage fully with the research community, understanding their needs, requirements, and wants.

Our research on the VERA project adopted the method of user centered design, in which the needs and activities of users are studied so that they can inform the process of designing new information systems and their interfaces[5]. such user centered methods have been applied to numerous studies of information seeking and use, and such studies emphasize the need to understand what users are doing in the course of their usual work, so as to design information systems and interfaces that are best suited for them (Shneiderman and Plaisant 2009). This is what Attfield et al. (2003) have called 'use-in-context'. Their study considered the processes by which

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students seek information and write assignments, but similar approaches have been used by the same research group to study various different users of information such as NHS patients (Attfield et al. 2006) and lawyers (Makri et al. 2008) to understand how the use of information and technology is integrated into their everyday activities.

The use in context approach is particularly helpful, as it recognizes that what users do when they work with information or use technology must be affected by the social setting in which this takes place, and does not simply concern itself with studying a user's immediate task, such as doing a web search on a particular topic. Kuhlthau's (2004) highly influential study of American high school students was one of the first to adopt this kind of method.6 She observed the students looking for information to help them with real tasks which were part of their studies, and used this to construct a model of the information seeking process, which has influenced most recent work on how people find the information that they need in many different contexts.

More classical Human Computer Interaction methods have tended to require users to undertake predetermined tasks in a usability laboratory. This approach is still widely used to test the functionality of information systems and can help to uncover specific problems to be rectified (Ingwersen and Järvelin 2005, chapter 3). However, real interaction with information seldom happens in controlled circumstances in a laboratory, and so the use in context approach emphasizes the need to understand the real circumstances in which information is needed or technology is used so that problems that exist in the real world will not be missed. Kari and Savolainen (2001) argue that we must situate information work in its broadest possible context, even recognizing that spiritual beliefs may have an impact on information seeking and use.

This holistic method is closely related to information ecology (Davenport, 1997; Nardi and O'Day 1999). This is an approach that takes into account the whole culture of a workplace or setting, including physical features such as noise and lighting, as well as recognizing that emotional and affective considerations are as important to the way people make decisions about what technology to use as reason and cognition. davenport for example cites an example of early daisy-wheel printers which could not be used an open plan office, despite being in working order, because the noise they made was unbearably loud. Our previous studies of humanities scholars have also shown that researchers may choose to use a particular environment such as a library or archive depending on how they feel about the friendliness of the staff, the level of light, or the cramped physical conditions, as much as their knowledge of its information resources (Rimmer et al. 2008).

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When studying the users of VREs then it can be argued that use in context is an ideal method, because by the very nature of the VRE itself we must expect its use to be embedded in the everyday research tasks of the user. Thus to produce a VRE that is most useful in the desired context we must understand the circumstances in which it will function. For the VERA project we therefore decided that, when studying the very complex environment of an archaeological excavation employing numerous staff, the use in context approach would be best suited as a way of capturing the variety of work being carried out and its relationship to the use of information technology.

THE VERA PROJECT

The virtual research environment for archaeology (vera[7]) project investigated the use of information technology by archaeologists in the context of field excavations and associated research. The VERA project was based around an established excavation of part of the large roman town at silchester[8], which aims to trace the site's development from its origins before the Roman Conquest to its abandonment in the 5th century AD (Clarke et al. 2007). This large-scale, long-term excavation is run by the University of reading's department of archaeology[9], and is used as a compulsory, hands-on training component of their undergraduate archaeology degree.

The rich and complex finds from the excavation have been logged, for the past decade, in the integrated archaeological data base (iadb[10]), an online database system for managing all aspects of recording, analysis, archiving and online publication of archaeological excavations. Students at the field school learn both about practice based archaeology, and how information technology can aid archaeologists with their complex recording requirements. Roman Silchester therefore provides usability experts with a site to investigate the use of advanced information technology in an archaeological context, and to study how such a rich database and complex research task can contribute to the design of VREs.

The goal of archaeological computing is to create a situation where 'the information flows seamlessly from excavation, through post-excavation to publication and archive' (Lock 2003, p. 265), and as a result VRE technology is very attractive for archaeologists aiming to record and detail their working practices. archaeology has a long history of using computers to aid in the logging and analysis of related data, but the use of IT to aid field archaeology is in its relative infancy due to the physical characteristics of archaeological sites, and the difficulties of using IT in the outdoor environment (Warwick et al. 2009). The VERA project, funded by the JISC Virtual

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Research Environments Programme (Phase 2) and running from April 2007 until October 2009, was undertaken by researchers at the school of Library, archive and information studies (now the department of information studies[11]), University College London, in collaboration with the school of systems engineering[12], the department of archaeology, University of Reading, and York Archaeological Trust.[13] The project investigated the tasks carried out within archaeological excavations – focusing on the Silchester dig as a case study – to ascertain how and where technology can be used to facilitate information flow within a dig, and to inform the designers of computational tools such as the IADB how the interface and environment may be adapted to allow integrated use of the tools in the trench itself (Fisher et al. 2010).

VERA also aimed to develop a VRE in which archaeologists may integrate not only the collection, recording and interpretation of data, but can also publish results and make them available to the wider archaeological community. For example, a recent article about Silchester was able to use a snapshot of the IADB to allow readers to search the data upon which the article's conclusions were based (Clarke et al. 2007). A fully functional VRE should allow archaeologists to make their own linkages between different types of data, thereby allowing users to perform their own interpretation of data excavated on site.

One of the most fundamental concerns during the VERA project was the issue of usability and appropriate design of advanced it. numerous studies have demonstrated that the successful uptake of IT depends heavily on understanding users and that if new systems do not fit into existing procedures and routines, uptake of the new technology will be poor:

> Publication after publication reaches the same conclusion: that technology is important but insufficient on its own for the success of ICT-enabled projects. Again and again technology projects fall down not because the hardware is unstable, but because different systems' architectures have been poorly scoped and designed. Without good change management and careful thought given to the people using the systems as well as the technology itself, ICT-enabled projects are unlikely to be successful ... (Jones and Williams 2005, p. 9).

Work on the VERA project was not only the back-end construction of a robust database that met emerging standards for portals (allowing the reusability of data, see Baker et al. 2008) but the integration of technologists with the archaeological

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user community to ascertain their requirements, from dig to database, and beyond. Previous attempts at using it to aid the excavations at Silchester had met with poor reception from the archaeologists digging on the site, due to neglect of their needs and existing patterns of work. It was important that we understood where technologies could aid the current system, rather than forcing unnecessary change upon established working practices.

VERA AND ITS USER COMMUNITY

To integrate ourselves within the community at Silchester, we carried out a series of diary studies (Warwick et al. 2009), looking at the work patterns of different archaeological roles and the way that they are supported by both digital and analogue technologies. a dedicated researcher joined the archaeological dig at Silchester, integrating herself within the community, and ascertaining how the data cycle – from excavating an object, to recording it, to digitizing it, to using the resulting database, functioned. in-depth interviews were carried out with all major stakeholders in the project, covering every possible user of the system, from managers to student diggers. a section of the site was used in 2007 to test new working practices, using new digital pens to record archaeological data in the trench which could then be uploaded immediately to the database, and these technologies were rolled out across the site in 2008 and 2009, following their successful integration into existing practices. For post-excavation analysis, user workshops were undertaken where we tested the existing IADB system, to discover where any issues emerged about its functionality, and demonstrated new iterations of the VRE in development. Interviews were also undertaken with those routinely using the IADB for archaeological research.

This integration with the user community was key to developing the existing IADB further. Without gaining the trust of the academic constituency, it would not have been possible to articulate specifications to the VRE developers. Without adequate training or explanation, tools and technologies tested within the trench would have had a hostile reception. Listening to user needs, encouraging user uptake, providing feedback, and a rewards mechanism (explaining exactly how we were trying to help, rather than hinder, the archaeological process) encouraged archaeologists at the dig, from the highest management levels to student diggers, to interact with us, and let us know both positive and negative aspects of the integration of technology into their working practices.

The VERA system which emerged from this process was an extension and rewriting of the existing IADB, with improved usability, and further facilities to allow

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publication, visualization, and interpretation of archaeological information. Technical specifications have been upgraded, allowing the IADB to function on secure servers at the University of reading, under standardized portal frameworks which will allow it to be extended and reused (Grove 2007; Baker et al. 2008). Additionally, the standards based approach to the project has allowed interoperability between several databases, including one held by the building a virtual research environment for the Humanities project at the University of oxford[14] which holds images of ancient documents, which can now be searched through the IADB and linked to related archaeological evidence. Cross- database searching, and the linking of external research sources, is a next phase in the construction of VREs.

Ironically, the IADB does not appear to be very different to the regular user than it was before, aside from the increased functionality. the existing system was well used, and had evolved to fulfil many aspects of research in archaeology: the VERA project took this successful model, standardized the technology behind it to ensure sustainability, longevity, and usability, and provided additional functionality (Rains 2008). The IADB that was redeveloped as part of the VERA project is currently being used at a variety of archaeological sites across the UK and europe[15]. A working demonstrator of the IADB that was completed as part of the VERA project is available on the IADB website.[16]

The biggest change at Silchester from the VERA project was the integration of new technologies within the dig itself: digital pens and global positioning systems that were integrated into the archaeological practice, thus speeding up recording times, as they allowed seamless transfer of new data into the existing database. Previously, records had been made on paper, and an assistant was employed over the winter months to transcribe paper records into the database. additionally, this increase in speed of recording and logging has facilitated research by allowing access to archaeological data in real time. this demonstrates that VRE technology can exist beyond the computer interface, as recording methods and practices can change to facilitate data creation and data entry.

The construction of the VERA system demonstrated issues related to the integration of new technologies into established archaeological processes. Concerns regarding the robustness of the digital pens in the archaeological environment were quickly overcome, but issues with establishing the digital pens (and their related context sheets) as part of the recording process at Silchester centered around the fact that the new technologies did not mirror the existing system, and this had to be addressed with the user community. it was noted that there needs to be more teaching for staff

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so that they are more confident about supervising technology on site, and that there should perhaps be compulsory teaching for students.

The VERA project demonstrated the importance of factoring in user needs when integrating digital technologies into existing archaeological practice. Unless the voices of those working with the system are acknowledged, any new implementation of technology will not fit into existing working patterns, and so stand little chance of being adopted. additionally, unless VREs replicate the existing methods they are designed to replace (or enhance), such as digital forms mirroring the established context forms to record the physical archaeological data at Silchester, they are doomed to failure. Using it in the trench is not as prone to failure as might be expected given the extreme nature of weather conditions often encountered: but may be prone to failure through not taking into account the needs, practices, and habits of those for whom it is designed to help (Fisher et al. 2010).

INVOLVING USERS IN VRE DESIGN

As the VERA project demonstrates, creating an integrated VRE system fundamentally relies on the creation of a community of service providers, tool builders and researchers working together to develop specific support for research tasks. This has to work alongside the development of the technical and organizational platform for integrating these tools into an overall research process: users are not terribly interested in the 'behind the scenes' nature of VREs, they just want them to aid them in their research.

De Roure and Goble (2009) describe the user-driven design principles underpinning the development of another of the JISC funded VRE demonstrator project, myexperiment.17 based at the Universities of Southampton and Manchester, MyExperiment is a collaborative scientific environment where researchers can safely publish their workflows, share them with groups and find the workflows of others, enabling researchers to distribute, reuse and repurpose methodologies and so reduce and avoid reinvention of working processes. Thousands of scientific researchers are using this VRE to aid them in their work, whilst building up a community of practice. the success of MyExperiment also lies with the user-focused approach to design this particular VRE, with all six of their design principles reflecting aspects of the relationship between researchers and developers:

- **Fit in, do not force change:** provide interfaces that connect easily to what people are already using rather than forcing them to make changes in their existing work environment.

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- **Jam today and more jam tomorrow:** match the effort required for uptake with an equivalent gain, giving users immediate benefits for little investment.
- **Just in time and just enough:** do not try to develop something perfect but deliver something quickly, then improve.
- **Act locally, think globally:** start working with people you know, who are typical examples of a class of users you want to target, and keep the system flexible enough to allow customization so that different needs can be accommodated.
- **Let users add value: u**sers who are engaged are likely to contribute to development in one way or another; they may extend the system, connect it to other systems or just submit a bug report.
- **Design for network effects:** keep in mind that behind each pioneer are a large number of people who will eventually take up usage, using the system in routine ways once the benefits have become sufficiently clear.

These six principles of development are complemented by six proposed principles of user engagement:

- **Keep your friends close:** use local contacts, early adopters and advocates to keep an ongoing dialogue open; focus on the day-to-day users but keep the senior patrons involved to utilize their weight in the community.
- **Embed:** embedding developers with users and users with developers for sufficiently long periods of time is much more effective than any other requirements elicitation technique.
- **Look at the bigger picture:** keep in mind that people use software as part of a wider context and that it needs to fit this context rather some ideal world vision of how things ought to be.
- **Favors will be in your favor:** build trust relationships through favors (such as writing custom code for early adopters) and a willingness to compromise.
- **Know your users:** maintain a good awareness of different groups of users and their different needs and troubles.
- **Expect and anticipate change:** requirements are a moving target, especially in research, where success does not lead to routine usage but to new requirements. (De Roure and Goble 2009, quoted and paraphrased in Voss and Proctor 2009, p. 185–86).

These principles, similar to the approach which we aimed to use within the VERA project, demonstrate that a pragmatic approach to managing the user-designer

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relationship can be successful, but it is acknowledged that the complex relationship between technology suppliers, service providers, intermediaries, and primary and secondary end users within VRE development requires careful monitoring. it is only by developing successful systems that address the particular needs of specific user groups that VRE technology will become routinely embedded in our research tasks: as we understand more about user requirements, the chances of wasting the financial and temporal investment required to build a VRE are lessened.

VRES AND THE LIBRARIAN

While the VERA system did not liaise directly with traditional online library systems, it should be obvious that the use of such VREs creates issues which relate closely to those raised within the digital Library community. VREs – particularly those which depend on cross-database searching – are dependent on structured, available information. Issues of knowledge representation come into play, as do the bugbears of sustainability, data longevity, and data standards. Providers of VREs need to be trained in data curation skills, and institutional commitments must be made to provide data repository services. VREs are an emergent technology, and it can be argued that many of their implementations would stand more chance of success and longevity if the technologists involved would acquaint themselves with the vast literature and expertise on related issues within the digital Library world:

> If VREs are to fulfil their potential as useful and usable artefacts, librarians need to have a central role in their development and application. Whether librarians are facilitated to make this contribution depends, in part, on whether they are proactive in and advocating for their potential roles... Librarians... need to be able to recognise a VRE when they see one because they should be drivers of the technology. and it is clear that librarians are increasingly identifying the VRE as an important concept that they need to investigate. now is the ideal time for librarians to explore the potential of VREs because, at this stage of their development, there is still time to influence their eventual form. (Wusteman 2009, p. 169–73)

Yet 'Research on how these concepts and technologies, and associated practices, impact or may impact LIS research, education, and practice is lacking' (Sonnenwald et al. 2009, p. 200). University libraries have, for the most part, developed a symbiotic

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relationship with VLEs, as they have become part of the higher education framework. However, in a recent study, although most librarians view the future of the profession as being in the teaching of information literacy and the custody and management of digital resources, few librarians viewed the integration of VREs within library systems as core to their discipline (brown and Swan 2007).

Although the VERA project has now ended, the IADB is now part of a JISC VRE Phase 3 Programme funded project, LinkSphere18 (running from April 2009 – March 2011), which aims to create a unified system that provides a single virtual interface for searching across all the digital repositories and collections of the University of Reading. It can be seen that the IADB, and the work of VERA, therefore become part of the university information infrastructure, joining with other disparate academic sources in a VRE, to provide wider access to existing data. User testing and user centered development of this umbrella system is required to ensure that it matches the needs of those who will require access to information for research. As well as undertaking user studies, our team now involves a professional librarian, providing expertise and guidance on issues such as metadata, digital curation, data storage, and information access. the role of the librarian in the development of VREs is becoming more central, and more necessary.

CONCLUSION

This chapter has aimed to introduce the concept of VREs, and demonstrate their relationship to existing Digital Library frameworks, whilst providing an overview of the need for user-led design when undertaking VRE development. VREs are an emergent technology, and there is much to be learnt regarding how we can create efficient, usable (and reusable) interfaces that assist complex research tasks, and access to disparate data structures. 'A successful VRE should be virtually transparent to the user: researchers do not want to use a VRE; they want to do research' (Wusteman 2008, p. 69). The best way to ensure the usefulness of VREs is to integrate closely with their research constituency. However, the longevity and sustainability of VRE technologies is dependent on many skills already possessed by the library community. Closer integration of users, creators, developers, and information specialists will ensure that sparse resources are not wasted, and the development of VREs that seamlessly blend with existing research practices and information structures.

NOTES

BUILDING USEFUL VIRTUAL RESEARCH ENVIRONMENTS

THE NEED FOR USER-LED DESIGN

By Melissa Terras, Claire Warwick and Claire Ross

Excerpted from *University Libraries and Digital Learning Environment*

1. www.jisc.ac.uk/whatwedo/programmes/vre1.
2. These include (amongst others): Building a Virtual Research Environment for the Humanities (BVREH) (www.jisc.ac.uk/whatwedo/programmes/vre1/bvreh.aspx), CORE: Collaborative Orthopaedic Research Environment (www.jisc.ac.uk/whatwedo/programmes/vre1/core.aspx), ISME: Integration and Steering of Multi-site Experiments to Assemble Engineering Body Scans (www.jisc.ac.uk/whatwedo/programmes/vre1/isme.aspx), and Silchester Roman Town: A Virtual Research Environment for Archaeology (www.silchester.reading.ac.uk/index.html).
3. www.jisc.ac.uk/whatwedo/programmes/vre2.aspx.
4. www.jisc.ac.uk/whatwedo/programmes/vre.aspx.
5. Usability Professionals' association www.usabilityprofessionals.org/usability_resources/about_usability/what_is_ucd.html.
6. this study was originally carried out in 1993, but the reference we have used is to the second edition of the book in which her results were published.
7. http://vera.rdg.ac.uk.
8. www.silchester.rdg.ac.uk.
9. www.reading.ac.uk/Archaeology.
10. www.iadb.org.uk/index.htm.
11. www.infostudies.ucl.ac.uk.
12. www.reading.ac.uk/sse.
13. www.yorkarchaeology.co.uk.
14. http://bvreh.humanities.ox.ac.uk.
15. See www.iadb.co.uk for a list of projects currently using the IADB system.
16. www.iadb.org.uk.
17. www.myexperiment.org.
18. www.linksphere.org.

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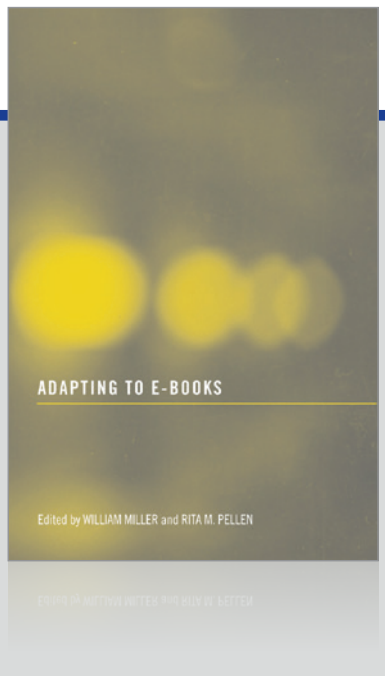
CHAPTER

5

NEW TYPES OF E-BOOKS, E-BOOK ISSUES, AND IMPLICATIONS FOR THE FUTURE



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Adapting to E-Books

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NEW TYPES OF E-BOOKS, E-BOOK ISSUES, AND IMPLICATIONS FOR THE FUTURE

By Aline Soules

Excerpted from *Adapting to E-Books*

INTRODUCTION

With new technological capabilities, it is common to replicate existing practices in a new setting. To date, the evolution of the e-book has primarily followed that pattern. The majority of today's e-books are simply print books presented in an e-environment. Their chapters may be searchable and navigable in a different way from the print world, but other features, such as the ability to "dog-ear" or "mark" portions or pages, are print concepts and terminology.

With a growing understanding of how the print book adapts to new technologies, however, authors and creators are taking the format into a new realm. The e-book is evolving into something that could never appear in print, and innovators are experimenting with new ideas. In some cases, these creations are not always recognizable as e-books, and there are those who wonder if the term *book* is applicable in any way, but the roots of these inventions are in the book, even as their creators take off in different directions.

HARDWARE

These experiments, however, while pushing the edge of innovation, are still bound to available technology, particularly hardware. One major challenge for the now- "traditional" e-book has been sustainable e-reading. In 2006, the Sony Reader digital book was described as "the first E-ink- equipped e-book reader in the U.S.,"[1] an important technical leap forward in readability with a display Sony describes as "almost paper-like."[2] Physically, the reader is easily handled with a long-lasting, rechargeable battery and extensive memory. In addition to e-books, it also handles other formats from PDF files to blogs to audio files,[3] but the technological discovery of e-ink is what brought the hardware closer to providing truly sustainable e-reading.

The success of this product, however, is still in question, as Sony has dropped the price significantly since its launch. Now, we have Amazon Kindle, "an electronic device that [Jeff Bezos] hopes will leapfrog over previous attempts at e-readers and become the turning point in a transformation toward Book 2.0."[4] Logging on to Amazon.com in late November, 2007 (and presumably through the pre-holiday marketing season) takes the shopper not to the regular home page but to a letter from Jeff Bezos and a link to the $399 Kindle sales page with messages from supporters such as Toni Morrison. This is the heavy-duty marketing machine in action. Also equipped with e-ink technology, the reader has features that are similar to Sony's product. There are two big breakthroughs. One is access to the content that

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Amazon.com has already established, along with the inclusion of different content (e.g., subscriptions to newspapers, magazines, and the like that are beamed automatically into Kindle) and the ability to sell that content relatively cheaply. The other is the wireless connectivity that enables the content to be beamed in. "This isn't a device; it's a service," according to Bezos.[5]

Ultimately, a separate reader may not make sense, as the new BlackBerry or Treo or the latest "all-in-one hand-held device" is developed with better visibility, a way of expanding the screen, and other features. For individual consumers, there may be two important tests—whether it will hold all our best loved or much needed books and whether we can read comfortably in bed! For creators of new types of e-books, this technological challenge drives them to create works that are either short in duration (i.e., mini-e- books, or delivered in small "bites").

E-BOOKS TODAY

One way around the reading challenge is to focus on content that is designed to be consulted rather than read from beginning to end. A reference book, for example, is more viable in e-format than a full-length novel. Other factors that make e-books more generally acceptable are the continuing replicas from the print world that provide familiarity (dog- earing, marking text), technology-based activity that is familiar from other software programs (cut and paste, download, print, annotate), and capabilities from other sources such as databases (searching, jumping from one chapter to another, saving, e-mailing, formatting for citation). The biggest advantage the e-book offers, however, is the anytime, anywhere accessibility that users love in the database and Web worlds.

As an example, think of the quintessential print book—*Encyclopaedia Britannica*. This multi-volume reference book is now *Britannica Online*, and you'd be hard pressed to consider it the same creature as its original. Now an e-reference title, this transformation behaves like a database with full-text content. Open it and you'll find that the content is essentially the same, although it is easier and faster to offer new entries; that there are links to a blog and more content outside the e-book; and that you can search both *Britannica* and the *Merriam-Webster* dictionary (two e-books in one). Conduct a search and choose an entry from the results list, and you'll get an article or a portion of the full article that you would previously have read in print. The hierarchy of the content is provided, allowing you to see where this information fits in the bigger picture of the larger article or category.

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In the library, if we are not simply buying or renting print books in e-form, we are acquiring emulations of the database world that we have come to know well. We rent or buy e-books or e-book packages from NetLibrary, ebrary, Safari, et al. Some titles now include audio and video clips. With the packages, we may get both books we want and books we don't (as the vendor secures publisher contracts and, by default, the overall selection), but we are buying or renting individual titles in increasing numbers, either separately or within the packages. At this point, we have built a critical mass, making it more likely that e-book titles will show up in user query results in our Online Public Access Catalogues and enable them to be a more familiar part of the information landscape. This helps to build e-book readership or, at least, e-book use. Users, however, still expect these "books" to behave in the same way as their print counterparts, and they don't necessarily envision them as something potentially different. They see the anytime, anywhere access and search capability as part of the delivery rather than the e-book. They may or may not see e-reference titles as books at all, even though, as librarians, we are conscious of their monographic roots.

FROM THE PAST TO THE FUTURE OF THE E-BOOK

So what happens next? Or what has been happening while we have been busy dealing with the e-books with which we are now familiar?

In 2002, I attended a Digital Literature Festival in Santa Barbara, California. One presenter was Ted Padova, who worked with Adobe Acrobat software, enhancing text in a variety of ways. He moussed over a piece of text in a history book to bring up an image, then an action clip of a battle. I don't remember the exact subject matter but, suddenly, history moved from dates and the rote memorization of the 13 causes of some war to a story of people and passion. Computers could already handle that type of information, although there were challenges; today, they can handle the information with ease and more effectively through links, clicks, and mouse-overs. We can enjoy animation, graphics, font—all embedded. Computers can also handle the file sizes involved.

NON-PROFIT EXPERIMENTS

Experiments have been going on for a number of years, as can be seen in the list of projects sponsored by the Institute for the Future of the Book.[6] The Institute is "a New York-based think tank dedicated to inventing new forms of discourse for the network

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age." It has a blog called if: book that "covers a wide range of concerns, all in some way fitting into the techno-cultural puzzle that is the future of ideas. When [they're] not writing this blog, [they] build open source software and lead publishing experiments with authors, academics, artists and programmers." It is funded by the MacArthur Foundation, affiliated with the University of Southern California, and located in Brooklyn, New York.[7]

Its CommentPress project has been a key foundation for many other projects:

> For far too long electronic documents have been saddled with ill-fitting metaphors from the realm of print: e-books, e-ink, e-paper etc. Publishers expect us to purchase, own and consume e-books (or articles, papers, journals) in basically the same way we do paper books, failing to reckon with the fact that texts take on different values and assume different properties when placed in the digital environment—especially when that environment is part of a network. Institute for the Future of the Book was founded in 2004 to, among other things, try to redress this failure of imagination by stimulating a broad rethinking—in publishing, academia and the world at large—of books as networked objects.
>
> CommentPress is a happy byproduct of this process, the result of a series of "networked book" experiments run by the Institute in 2006-7. The goal of these was to see whether a popular net-native publishing form, the blog, which, most would agree, is very good at covering the present moment in pithy, conversational bursts but lousy at handling larger, slow-developing works requiring more than chronological organization—whether this form might be refashioned to enable social interaction around long-form texts.[8]

The first of these projects was McKenzie Wark's *GAM3R 7H30RY*. Wark's style of writing in small sections facilitated online discussion and became an example of the idea that books can be created by many authors. The subject of this networked book is the critical theory of games, and the public helped to write it. They commented in "digital 'margins' that allowed "a stream of unabashed conversation."[9] Wark used the comments from this two-way dialogue to create his book. During that time, the hope was that it would "be an unprecedented hybrid authorship,"[10] and that hope came to fruition. The print version that emerged was published by Harvard University Press in

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2007 and "includes an edited selection of comments from the Version 1.1 web edition,"[11] which is still online. Wark then mounted Version 2.0 on the site and took more comments, but now he says he is moving on to other things.[12] On the Web site, however, there are now visualizations to explore and other forums. In libraries, catalogue entries provide links to an electronic table of contents, another emerging feature for books in general, and on the Harvard University Press Web site, you can listen to a short interview with McKenzie Wark.[13] Harvard University Press also contracts with ebrary for its standard e-books, although at this time of writing, Wark's book is not listed.

Of the Institute's other projects, *Sophie* was designed "to open up the world of multimedia authoring to a wide range of creative people. Originally conceived as a standalone multimedia authoring tool, *Sophie* is now integrated into the Web 2.0 network,"[14] enabling streaming documents and the embedding of various media and objects and the use of live dynamic text fields for comment (again via CommentPress). In July of 2007, an early release was made available for downloading.

Readers can explore the Institute's other projects at their Web site.[15] These projects make use of techniques that involve others in digital conversation and comment and offer educational opportunities for debate and thought among the participants.[16] They also offer authors a chance to engage in an iterative process of writing, comment, re-writing, idea testing, more writing—all enhanced by digital conversation. The Institute also solicits proposals for larger-scale publishing projects to "be developed with an editorial board that will also function as stewards of the larger network."[17]

The Institute has also supported various visual projects or art e-books. The Gates project, an Experiment in Collective Memory, was a joint project of Flickr and the Institute to "remember" Christo and Jeanne- Claude's Gates Central Park project via pictures from voluntary contributors. These were either photographs or manipulations of existing photos. The blog enabled comments and discussion that, in turn, influenced how the "collected content" was used.[18] In this case, the collective creation was not synthesized by a particular author or a particular group of authors but remained in the hands of the contributors. In June, 2007, an entry stated that the project would be dormant while plans were made for the archive. The entry further noted that there were "3,564 photos collected under the 'gatesmemory' tag in Flickr."[19] The final entry on the Institute Web site is an August, 2005 link to an online lecture about the Gates by John Weber, Director of the Tang Museum at Skidmore College. When I contacted Dr. Weber about the project, he noted that it had been

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more than 10 years since the original Gates project.[20] Currently, this appears to be finished, although its final form is in multiple pieces located in multiple places.

In IT IN place, the artist presents still images for comment and has been doing so since February, 2005. The last entry I viewed was on October 27, 2007, which is unlikely to be the last entry in this ongoing e-book of images. There's a link to the same images on Flickr and also a "Vimeo" site with an invitation to upload videos to that site for free. There are video examples to view.[21] When you view the images on the blog, you see that there are a minimal number of comments, which raises the question: If they give an e-book on a blog and no one comes, does it really exist?

Some projects are pure experiments, some are author-driven, some are open to the collective imagination, some are designed to appeal to niche audiences, some are designed for the public at large—they are all hybrids of Web, content, and software, each element combining and enriching and informing the other. Some are successful, some less so, but all of them push the envelope and test the limits of what is possible.

Mysteries and Desire: Searching the Worlds of John Rechy is part of an- other project called the Labyrinth Project. It is described as an "interactive memoir in three sections."22 "Memories" offers a "three-dimensional representation of Rechy's subjectivity," "Bodies" offers a "gestural" interface, and "Cruising" allows you "to control the rhythmic mix of movements, mu- sic, setting and commentary." This e-book is for sale at $39.95. This is one of three e-books available from the Annenberg Centre for Communication at the University of Southern California. To quote from its web site:

> Working at the pressure point between theory and practice, the Labyrinth Project is a research initiative on interactive narrative, directed by Martha Kinder, at the Annenberg Centre for Communication at the University of Southern California in Los Angeles. In pursuing its primary goal of expanding the language, art, culture and theory of interactive narrative, the project has produced a series of electronic fictions with three award-winning artists well known for their experimentation in non-linear narrative who had not previously worked with electronic multimedia: novelist John Rechy and independent filmmakers Nina Menks and Pat O'Neill. Participating in the conceptual design and production, these artists collaborated with the Labyrinth core creative team, headed by writer-producer Marsha

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> Kinder, art director Kristy H.A. Kang, and interface designers Rosemary Comella and James Tobias, with a supporting crew of students from the USC School of Cinema-Television.[23]

There are other e-book projects of a very different nature, projects that at first glance appear less adventurous than the above examples, but which are equally experimental and deeply rich in content. Examples can be seen in e-book archives. Disciplines such as history and literature are particularly served by these efforts.

The Library of Congress American Memory project is a library of multiple "collections," within which are topics, within which are e-books of various types—documents, images, media—all searchable, all linked to sites for teachers, and all connected to a librarian for assistance.[24] This archive is continually growing via various forms of e-books and is another example of how it is difficult to be sure that an e-book or a collection of e-books is finished. People may stop working on it, as is the case with Wark's book or the Gates project, but someone might take a fresh interest and start up again.

Another example is the Whitman Archive.[25] Funding is provided by government agencies and universities, and there is an effort to gather donations in order to create a permanent endowment for the project. This e-book has two named editors, project staff that includes scholars and a librarian, and an advisory board. The sections of the site serve as forms of online chapters (e.g., manuscripts, criticism, images, audio, bibliography) and the site carries all the authority of the scholarship that has been and continues to be invested in its creation. The images section is reminiscent of an art exhibition catalogue.

These various e-books are direct communications from the creators to the users, an aspect that makes them particularly valuable in addition to the high scholarship which they represent.

COMMERCIAL ENDEAVOURS

While non-commercial efforts may struggle for funding and must rely on the generosity of foundations, universities, and donations, the commercial world is trying to make e-books viable under the drive of profit. This is a different type of challenge and results in slower development of experimental types of e-books.

Publishers' current attempts at transformation are focused on reference titles, as described with Britannica Online earlier in this chapter. The advantage is that most

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reference titles are not designed to be read cover to cover, by-passing the whole readability issue. Some publishers are further ahead than others with these conversions and are planning or implementing new e-only titles. Gale's Virtual Reference Library, for example, provides a platform for its full range of transformed e-titles, and each library's site is populated with its particular subscriptions. Titles are available for students throughout their educational experience (e.g., Kids InfoBits for the K-5 crowd) or the many titles provided to the higher-education market. On the site, the "edition" and "year of publication" are given, and these titles carry both an ISBN and an e-ISBN. Once the publisher puts the material online, it's a simple step to engage in continuous or frequent updating. Once that happens, are they still e-books? Or are they more like e-serials? Gale is staking its future on its virtual e-reference collection, currently the highest revenue goal for the company, according to product manager Erin Sullivan.[26]

Thomson Gale also offers its Business Plans, a collection of actual business plans written by entrepreneurs seeking funding throughout North America. Rather than collecting them into a print book, Gale is making them available to business people when and where they're needed. Other business e-books include encyclopaedias of business, management, and small business.

Many Alexander Street Press products are reminiscent of the Library of Congress American Memory project. They offer collections of e-books within their databases. Media elements enhance music and performing arts, transcripts from therapy sessions provide original material in Primary Sources in Counselling and Psychology, and the list of benefits extends to every discipline. These, too, are moving from the traditional book concept to a more fluid evolution with new e-book portions added as available.

An alternate commercial approach is to work the advertising model, a` la Google. Services like SpiralFrog "offer music, videos, and, in one case, books for free in exchange for users having to view advertising. For businesses like music and book publishing, which are largely transactional, experimenting with an ad model is fresh territory that could ultimately deliver a new revenue stream."[27]

University presses are also getting into the act. According to its Web site, Rice University "has re-launched its university press as an all-digital operation."[28] After a fairly extensive experimentation stage, the press has chosen this approach to deal with the economic and other challenges of scholarly publishing. Traditional peer review and editing remain, but "rather than waiting for months for a printer to make a bound book, Rice University Press's digital files will instead be run through

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Connexions for automatic formatting, indexing and population with high-resolution images, audio and video and Web links."[29] A creative force behind this idea was Rich Baraniuk, a professor who was dissatisfied with the textbooks available to him. Again, this is a blend of Web, content, and free soft- ware tools to foster the evolution of the material through development, manipulation, and continuous refinement.[30] In addition, there is a focus on open source. Economically, Rice wants to focus on fields impacted by high costs, such as art history or medical diagnostics, but from a scholarly perspective, the Press is interested in fostering new models of scholarly work that use text, media, and Web in a composite whole. This goes back to Ted Padova's early work with Adobe Acrobat in 2002, work that was an early forerunner of what many scholars are now seeking to implement in this now-richer technological framework.

DEFINITION OF AN E-BOOK

By this point, you are probably wondering whether all these experiments and resulting titles can really be described as books, e- or otherwise. They contain everything from text to images to audio to video, all in varying degrees. As part of the interview process, I chose not to ask interviewees about their definitions of an e-book until late in our conversations. While they knew the purpose of the interview, I still wanted them to consider their works without the constraints of a "label."

As expected, interviewees tended to base their e-book definitions on the area or areas of their own focus. In some cases, the definitions were primarily technical, requiring that the creation be initiated digitally and primarily published digitally but with no restriction on content or the presentation of that content. In some cases, the definitions were quite narrow, with a view of the e-book as an electronic equivalent of the print version. One interviewee considered the e-archive as a whole new entity; another thought of it as simply a new e-edition. To some, the very term "e-book" was a problem. In one case, e-reference was the preferred term because, for that individual, the e-book carried the baggage of requirements for equipment/hardware for viewing and problems related to checking in and checking out e-copies. In another, it was suggested that only librarians are hung up on this terminology. For some, the e-book is merely a rite of passage between the print book and something as yet not invented. For one person, it is an "experience of reading; for another it a "constellation of possibilities," a definition I found most appealing as I envisioned the open road of e-adventure that will take us to new experiences and expand our minds with new thoughts, images, and stories. That definition comes full circle, in a way, because wasn't the printed book just that—a way to expand and explore beyond

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ourselves as we turned each page? Now, instead of turning a page, we click a mouse or engage with the material in some other way.

It is important to note the point that only librarians care about the term "e-book." Just as users haven't cared in the past whether the information comes in a book/monograph or serial/periodical, so they probably don't care about the form of the information they encounter online. What they want is the information that they need or are interested in pursuing, that is presented in an engaging way, that is available anywhere and anytime, and that is affordable.

PASSIONS, CHALLENGES, AND ISSUES

For this article, I interviewed 28 authors, creators, editors, publishers, vendors, and librarians who are involved in these new types of e-books, eliciting perspectives on various passions, challenges, and issues, along with very different emphases reflecting the divergent worlds in which the interviewees live and work. I am very grateful to all the interviewees for their time and thought on these topics.

The Appendix provides the questions I used with each interviewee.

BENEFITS

Many non-commercial experiments are connected to the academic world. It is part of the research endeavour of a number of faculty members in a wide range of disciplines. There are so many facets available in the creation of these complex materials that there is room for very varied and exciting collaborations, as attested to by the list of participants in some of the projects described above. Artistically, the world has exploded with opportunities to offer original materials on a much wider scale. Those materials can be new creations, as with *Gamer Theory* or *Mysteries* and *Desire*, or they can be primary materials such as are provided by the American Memory project or the Whitman archive. The increased accessibility of content and the expansion of when and where it can be accessed are among the most important shifts in our creative world.

Another wonderful aspect of this process is in the new relationships possible between creators and those who come to the material. There has always been some form of feedback on print books, whether it's a formal book review or letters to editors or some other communication, but it has been much more asynchronous and much less frequent than it is now. When you consider the decision of the Gates project to leave the collective creation in the hands of the contributors and Wark's *Gamer Theory* process of

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involving participation in the creation of the work, it is clear that these new paradigms change the nature of the creator/"reader" relationship significantly.

These wonderful aspects of e-books and e-book experiments are not without their challenges. The use of the word *passions* in the heading for this section is deliberate. Those involved in this process are clearly passionate about their projects. They face significant challenges, both in the creation of these works and also in the environment in which they live and work.

ECONOMICS

More than one interviewee spoke of the costs involved in these projects. In one interview, David Goldberg, professor at the University of California and Director of its system-wide Humanities Research Institute, spoke of the work on his new book and how he kept "stumbling across images that were deeply connected to his thoughts,"[31] but he also discovered that it is too expensive to get rights to images and that even if he secured the rights to use the material, his publisher would be faced with impossibly high production costs. Goldberg will develop a Web site to go with his book and will include URLs throughout the book, but this will not be the same as fully integrating images into the text.

One of the first costs, therefore, comes at the very beginning of the creation process. The intellectual property issue came up over and over again with interviewees of all types. This issue is too complex to explore in depth in this chapter, but, as Goldberg pointed out, it is part of the economy of the creation and publication of e-books, and part of the politics of publishing as well. There are no easy answers and it will impact significantly what will ultimately be possible. The Whitman archive has a separate chapter called "Conditions of use."[32] A quick glance reveals the complexity of the issues. The site explains fair use and provides a form to request permission along with a list of contributors. There are extensive details on what to request and from whom. The form is only for materials described as being under the archive's copyright. Requests for other materials must go to contributors, including public and private libraries and special collections that presumably have requirements that differ from one to the other. These processes require time, money, persistence, and patience.

SCHOLARLY CHOICES

How is information chosen for e-books? Google has been digitizing books for some time and doing so on a large scale, but the choice of what to digitize has been largely arbitrary from a scholarly perspective.

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The libraries with whom Google has contracted may influence digitization decisions, but intellectual property constraints, the easy availability of some titles over others, the condition of physical copies, and other factors also affect what is and is not digitized. As has probably always been the case, the development of new content is based on the particular passions of creators with some constraints from the outside world, while conversion of old formats to new is influenced by the expediency of what's available, what's technologically possible, and what's economically viable. Knowing this, it would be a wonderful pipe dream if we could foster some collective discussion on this subject. These constraints also affect the much smaller experimentations. Creators, such as Wark and Rechy, may largely avoid this particular problem, but authors such as Goldberg experience it, as do those working with archival e-books.

AUDIENCE

The audience, if you can still call it that, is shifting. As was seen above, there can be challenges in getting people to a blog, like the IT IN place project, but there are also unexpected audiences for material as well. In my interview with Matt Cohen, a contributing editor to the Whitman archive, he mentioned that there are some 22,000 hits a day from secondary schools.[33] The Whitman archive is a particularly scholarly endeavour that comes from a higher education research environment, but teachers and students are drawn by the opportunity to make Whitman come alive through his work, his images, and even a recording (there is a "36-second wax cylinder recording of what is thought to be Whitman's voice reading four lines from the poem 'America"').[34] This raises the question of why one site draws participants and one doesn't—content, presentation, ease of navigation, search algorithms, marketing, support for constant updating and change, the possibilities are many. E-books are more complex to create than print books because content, technologies, editing, and marketing must each be effective and also be successful in combination.

The audience factor is growing not only because of their involvement in actual creation, but also because we know more about them through the unprecedented tracking capabilities of the online world. If a site like the Whitman archive gets 22,000 hits a day from secondary schools, what might that do to the archive's choice of direction? With its funding sources and the "contained" subject focus, it may or may not make a difference in this case, but for commercial enterprises, audience is everything because audience translates into profit. While the popularity of titles in the print world influences the choice of future projects, there have usually been a few

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editors and publishers willing to take a chance on a marginal project. With narrower profit margins and a capability to dissect an audience's characteristics to the finest detail, such projects will either disappear or have to be picked up by the non-commercial world. The popularity contest with relevance ranking is now in full force.

Another audience issue is language. While print books at a certain level of success have been translated into other languages, the worldwide nature of the electronically connected audience changes the dynamic on language considerably. If, as Matt Cohen stated, Whitman is read by more people outside the United States than in the United States and if more people read Whitman in languages other than English than they do in English, how does that affect your creative direction and its significance to the audience? The archive chose a graduate student from a literature program to create an e-edition of a Spanish translation of Whitman's poems from 1912, but this is a small portion of the archive. One argument might be that, as an archive, the materials are valid in their original language, but ultimately, the Google model of being able to work with material in multiple languages will prevail. The scholarship, economic, and political implications of this are significant.

Assistive technology initiatives are another audience issue that affects creation. While capabilities in this regard are developing, creators are challenged when it comes to implementation. These initiatives take time, expertise, and money, but as assistive technology mandates are largely unfunded, this is a major challenge for all creative works and particularly for non-mainstream works with fewer resources.

An assumption is also made that the audience has access to the technology needed to view these new creations and that, in turn, raises the "have" and "have not" issue that carries its own world of politics and moral responsibilities. Some vendors genuinely question whether e-books are an appropriate delivery mechanism for K–12, as was raised in my interview with Miriam Gilbert of Rosen Publishing Group.[35] Part of it is the practical cost of creation coupled with the ability to sell these materials in sufficient numbers. Capstone Press, for example, offers Interactive Books,[36] but how well they are selling is unclear. In addition to customer demands for which customers can't pay, the schools that might want these materials may have no technology on which to view them. Until that gap is addressed, commercial publishers will continue to have an uphill battle. Even if the gap is addressed, publishers haven't found the key yet, that certain something that will make e-books "go."

TECHNOLOGY

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In addition to content issues, creators must now wrestle with server hosting, network, and backup; design issues, coding, and content preservation; and questions of upgrading, re-coding, and adapting to ever-changing technological developments. The working groups on these projects need representation from both content and technology providers. Politics and economics can easily drive decisions in these technological areas and jeopardize projects. The working groups formed for these various projects are keys to their survival and ongoing viability.

Audience access is also bound by technological limitations. Will separate e-readers be needed or will multi-function devices facilitate access to these new creations? Who will help with technology problems? Right now, help comes formally, if you are affiliated with an institution of some sort, informally, if you have a friend or contact with knowledge and willingness to help, or through payment to a service, if you have neither of these connections.

THE DYNAMICS OF LEARNING

We now live much more in a learning environment of "bites"—textual bites, sound bites, visual bites. What does this do to our learning? Many interviewees expressed a hope that textual reading and the print book would not disappear, but no one thought that it would continue to hold the same exclusive dominance as it has in the past. Moving into this new world offers access to a range of material, allows for a greater ability to create relationships among various pieces and forms of material, facilitates the user's interaction with the material, and generally creates a new dynamic for learning.

Wonderful as this is, there is a price to be paid and that price is not only sustained readability, but sustained reading. We listen to books, often with the accompaniment of revving car engines; we pick up pieces of related mini-books from a summary on the Web; and we watch a *YouTube* clip of an author or a review interview on the *Daily Show*, but do we read the book? The reason we like e-reference titles is that we can get snippets of information but experience those snippets holistically. Children see as normal an online encyclopaedia with pictures of lions and tigers accompanied by appropriate roars and running motion. Perhaps there's even a little text underneath. The content world is permanently changed. Will our brains go with it? Will we be hard-wired differently? How are we interrelating with information and how will we evolve as human beings as the nature of information and the nature of that inter-relationship changes? For Paolo Mangiafico, a Digital Project Consultant with Duke University Libraries, "the interesting questions are around where filtering happens

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and the discovery process."[37] In the era of print, the filtering process took place before a book was published, when an editor or publisher decided whether to invest in that work or not. Today, when the publishing conglomerates have absorbed the independent publisher and independent booksellers are an endangered species, this new world of experimentation is opening. Today, when anyone can create anything and share it, the filtering takes place after the publication. It happens through sites like del.icio.us[38] or the LibraryThing[39] or Connotea;[40] it happens through blogs; it happens through online social networks. The meaning comes through the digital conversation or through the way the user engages with and manipulates the content.

Will there still be a place and time for sustained reading with its accompanying extended thought? Is there still a place for the long, cohesive argument? Or will the engagement simply be a continuous chain reaction of "bites"?

THE WORLDS IN WHICH WE LIVE AND WORK

For academics, pursuing these new experiments is not without personal risk at times of retention, tenure, and promotion. For the untenured in particular, there is significant risk that they will find themselves job hunting. To hedge against this, a number are ensuring that they also secure publication in traditional environments. In tenure review, faculty still gives more significance to publication in print than in e-form, although, ironically, as users of information, they prefer to work with electronic information from their homes or offices. At some point, preferably soon, this structure needs an overhaul.

In mid-September 2007, ebrary facilitated an informal survey designed by librarians to try to gain a better understanding of the faculty experience with e-resources and print materials. As of this writing, the results are not yet available [Ed. note: the survey appears elsewhere in this volume], however, it is clear that something is still not quite connecting. Students love print books in e-form, although I suspect they are not trying to read entire volumes. It is too early to tell how they will respond to new experiments. They certainly visit the Whitman archive and the Library of Congress American Memory project, but are they merely a captive audience, sent there by their teachers? What proportion of them chooses these materials independently?

For those in the commercial world, the pressures are enormous. The demands for information in new formats with multiple capabilities are not balanced out by the non-corporate customer's ability to pay. Commercial providers also experience a good deal of frustration. They would like to move faster, keep up with customer

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demands, provide what is requested, but they must see a profit. There is fear that the profit won't be there, that the risk they take may be their last, after which they will either be sold to the highest bidder or put out of business. There are also lingering assumptions that may or may not still be true—the "need" for equipment to read them or issues with platforms they have known and not loved. Some vendors are thinking about partnerships and who might be willing to take a risk with them, thereby spreading and minimizing the economic danger to all.

THE ROLE OF THE LIBRARIAN AND THE LIBRARY

We librarians have long seen ourselves as providers of information. That includes collecting it, organizing it, providing access, teaching information literacy, and a host of other activities centred on "things." This is rapidly becoming a "thing" of the past. As mentioned above, only librarians really care about whether a book is a book or a serial is a serial. The reason for that concern has been the embedded structures we have developed to organize the information. However, what does that mean if a project, like the Gates project, is created by multiple contributors, comes in multiple formats, and is finally housed in multiple places?

One fascinating thing about these new experiments is that their format and structure are emerging organically from the material itself. In poetry, this happened a long time ago. The pre-structured form—sonnet, villanelle, haiku—once provided a framework for ideas and content. When "free" forms emerged, the poem's intrinsic nature led the creator to the final form—number of lines per stanza, lined poem vs. prose poem, and so on. With these new experimental e-books, the same thing is happening. The material itself is driving the form and the future will likely bring forms we have yet to imagine. This has significant implication for organizing the information and the material, if librarians continue to see that as their role. Information is scattering both physically and intellectually—to institutional repositories, to Web 2.0 (soon 3.0 and beyond), to new configurations, to multiple creations, to forms of text and sound and visual images—both still and moving. In addition, these materials are not "collectible." For years now, we've rented information rather than buying it. Now, we are unlikely even to rent it. Our role in preserving information is still strong, but collecting it is another issue. It is good to note that librarians are involved in the American Memory project and the Whitman archive. These librarians are collaborators on the creation teams with a positive role to play, brokering the information by participating in and facilitating the conversation among creators and users. This is a very different role than what they played in the past.

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In terms of access, our role is also more social. As Web search engines continue to improve, many users find it easier to find what they want in- dependently. For the foreseeable future, we will likely provide access to content by paying for commercial offerings—databases, media, some print material—but that role is predicated on a sufficiency of budget, on a budget that continues and expands along historical lines, and on continued use of our services by vendors. There have been attempts in the past to sell directly to the user and those could easily come back into play as the pay-per-view model gains momentum. Clearly, one can buy Rechy's e-book directly through the Web, but to provide general access, will a library have to "collect" it or will there be some other way to make it available? The material could potentially be accompanied by advertising, shifting the cost in that direction, as SpiralFrog is doing, although that particular title might not be considered popular enough or mainstream enough to warrant that effort.

As a result of these shifts, our role in information literacy is increasing and will continue to do so. If users can find what they want independently, our role is to help them interpret what they find. While we currently also teach them how to navigate our archaic world, that element is less prominent and the new reality is how to manage Web 2.0, both in terms of content and tools. We also need to help users understand what's out there. The example of IT IN place with its minimal comments illustrates the nature of this issue and the importance of librarians' role in this regard. Again, it is about facilitating the conversation rather than about providing the information. The information is provided directly by the creator; the post-publication filtering, as Mangiafico noted, is where the peer-review and selection takes place.

And what about the library itself? That, too, requires transformation. If everything is "e," what's the space for? Of course, retrospective print materials will be around a long time and still need to be provided, but the library is now a conversation place where technology and content merge (perhaps also with coffee!) in an atmosphere that, once again, facilitates the conversation. That conversation can be between the user and the information, among users and information, just among users about information, but it's a conversation that can be facilitated and brokered effectively in the library.

CONCLUSION

In 2002, when my mind was opened to the potential of e-books, I couldn't wait for them to emerge and integrate with other daily offerings of information. It has taken

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longer than I expected, and we are far from the finish line. There are also those who think the e-books' day will pass before they get fully off the ground, as we move on to other inventions. While commercial vendors must make e-books fiscally viable, those who are sup- ported by their academic institutions or by foundations and non-profits can experiment. Yet, in spite of the challenges in getting e-books transformed and into the mainstream, I believe they will ultimately make it, offering continuous and current updating, incorporating images, audio, and video as a matter of course, and providing features that are still to be dreamed. On a practical level, think of a nursing textbook with a mouse-over demonstration of a technique. Think of a music text with audio examples. Think of moussing over a poem to hear it read by the author or seeing a flash poem that can never appear in print, all with complementary Web sites, blogs, and/or wikis for comment, discussion, and influence over the evolution of the e-book itself.

The e-book, or e-whatever, offers an amazingly complex future and one that promises great excitement, engagement, and proactive learning. And, I still hope, a good read in bed!

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APPENDIX

INTERVIEW QUESTIONS

NEW TYPES OF E-BOOKS, E-BOOK ISSUES, AND IMPLICATIONS FOR THE FUTURE

By Aline Soules

Excerpted from *Adapting to E-Books*

1. WHAT NEW TYPES OF E-BOOKS ARE YOU CURRENTLY CREATING? NOTE: BY NEW, I MEAN TYPES OF E-BOOKS THAT ARE NOT SIMPLY E-FORMATS OF PRINT BOOKS, BUT BOOKS THAT CAN ONLY APPEAR IN E-FORMAT.

a) What are the challenges?

b) What are the benefits?

c) What other considerations should we discuss?

2. WHAT EXPERIENCE OR KNOWLEDGE DO YOU HAVE WITH USER INTERACTIONS WITH THESE NEW E-BOOKS? HOW DO YOU ENVISION USERS INTERACTING WITH THESE NEW TYPES OF E-BOOKS AS THE USERS GAIN GREATER FAMILIARITY WITH THIS NEW TYPE OF INFORMATION SOURCE?

3. WHY DO YOU THINK E-BOOKS HAVE TAKEN SO LONG TO "TAKE OFF"? WHAT DIFFERENCE WILL NEW TYPES OF E-BOOKS MAKE TO THAT ADOPTION CURVE?

4. WITH WHAT NEW TYPES OF E-BOOKS ARE YOU CURRENTLY EXPERIMENTING?

a) What are the challenges?

b) What are the benefits?

c) What other considerations should we discuss?

5. HOW DO YOU ENVISION USER INTERACTIONS CHANGING WITH THESE NEW EXPERIMENTATIONS?

6. WHAT IS YOUR LONG-TERM VISION FOR NEW TYPES OF E-BOOKS, BOTH IN TERMS OF TECHNOLOGY AND IN TERMS OF USE?

a) What are the constraints to reaching this vision?

7. IN THE DIGITAL WORLD OF MOVIES, YOUTUBE, STREAMING AUDIO/VIDEO, AND OTHER TYPES OF MULTIMEDIA,

a) What role do e-books have?

b) Why will users choose e-books over other forms of information sources?

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Excerpted from *Adapting to E-Books*

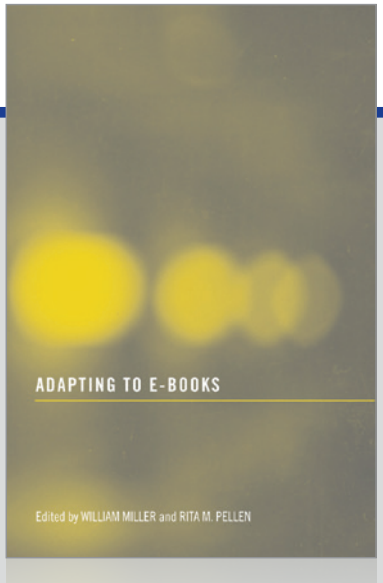
8. AFTER OUR DISCUSSION TO THIS POINT, HOW DO YOU DEFINE THE TERM "E- BOOK"? WHAT CHARACTERISTICS DISTINGUISH IT AS A UNIQUE TYPE OF INFORMATION SOURCE?

9. DO YOU HAVE ANY OTHER POINTS, IDEAS, OR ISSUES TO SHARE? WHAT QUESTIONS HAVE I OMITTED TO ASK?

CHAPTER

6

MANAGING USER'S EXPECTATIONS OF E-BOOKS



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MANAGING USER'S EXPECTATIONS OF E-BOOKS

By Elizabeth Kline and Barbara Williams

Excerpted from *Adapting to E-Books*

INTRODUCTION

Publishers are beginning to market e-books to libraries because digital resources are a main focus of collection development. The vendors who provide access to e-books tend to have differing technical requirements and dissimilar procedures for accessing their content, which leads to user expectations that currently cannot be met. Partly because of these user frustrations, increasing the use of e-books on our campus is a formidable undertaking. We hope that in the not-so-distant future, e-book platforms will resemble one another in technical requirements and modes of accessibility. Such similarity across vendor platforms will allow customers to easily traverse the myriad e-book options in a seamless unmediated environment. However, until the e-book industry becomes more streamlined in its technical requirements and modes of accessibility, librarians must find ways to minimize users' frustrations with the status quo.

THE STATUS QUO

Librarians are keenly aware of the advantages of digital resources, including space savings and lack of geographical constraints. Yet despite the anytime, anywhere convenience afforded by the digital format, e-books still lag in adoption by customers. The 2007 ebrary survey (see elsewhere in this issue) revealed that faculty preferences for e-books lagged noticeably behind e-journals, online reference databases, and educational, governmental, and professional Web sites. This lack of acceptance may be a manifestation of the confusion library users experience when confronted by the variety of accessibility modes, vendor platforms, and variant technical characteristics of e-books.

Customers who experience barriers when interfacing with e-books are quick to point out their disapproval and frustrations. In fact, customers frequently submit complaints about e-books via feedback forms on our library Web site, and we suspect they quickly become overwhelmed and uncomfortable when using these resources. Librarians equally voice their disappointment with these resources, but while librarians are well versed in the issues users experience and can facilitate customers' interaction with e-books, the challenges could be greatly reduced by changes in our own acquisition and access processes. Many different library staff, including those in cataloguing, licensing, and technology, are involved in the acquisition and access processes, and not all know what is essential for resources to function well in the public sphere when released to the user.

MANAGING USER'S EXPECTATIONS OF E-BOOKS

By Elizabeth Kline and Barbara Williams

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Information seekers are accustomed to clicking links in a networked environment and with such action they expect to access full-text content that is related to their topic of interest. This is not an unreasonable expectation, and it is not surprising to librarians that users are unaware that the information they are accessing has been made available by their libraries. Information seekers are busy trying to get the information they need, and they are not concerned with where the content comes from. Their main concern is to find what they are seeking in a timely manner. Streamlined access, therefore, is an essential characteristic for all digital products. So it is desirable for libraries to obtain MARC records for all available re- sources in a timely manner. Cataloguing departments can quickly process good records in one quick swoop by batch processing, thereby allowing users to search and connect to the needed resources from the online catalogue. However, e-book vendors do not always provide MARC records in a timely manner, and different vendors require different procedures to access the content. This procedural access continuum ranges from easy, just a click, to complex, such as the necessity of entering one's institutional identification number.

MARC records are not always readily available for individual titles, and vendor-supplied MARC records are not always usable or distinguishable from records for the printed book. For this reason, searching and finding information beyond the online catalogue is difficult for a user because library systems are not the first sources users consult at the start of their search for information. The recent agreement between OCLC and Google to exchange data and link to electronic content is a major development for libraries because library resources will gain more visibility, which leads to increased use. When items are not easily discoverable, not only do resources remain underutilized but collections are impacted because of duplication, and library users cannot conduct their work in an optimal setting.

If users are lucky enough to be able to manoeuvre around the current array of access barriers to e-books, they still must cope with the assortment of platforms available and each vendor's idiosyncrasies. Much like databases, e-book interfaces vary by publisher. Some platforms mimic their print counterparts with turn-the-page technology while others have chapters sectioned into portable document formats (PDFs). Some platforms restrict the number of pages that can be printed while others do not exert limits. Users get particularly troubled when they discover that in some instances checking-out an e-book makes it unavailable to others. It is counter-productive that an electronic resource is not available simultaneously to all users. This is extremely problematic for faculty who assign a reading to a class because it means that the item is unavailable to the majority of students in the class. Unless the

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librarian is aware of this assignment and provisions are made to place the item on reserve, this has serious ramifications for faculty as adjustments have to be made to curriculum schedules.

Librarians not only contend with the multitude of problems associated with managing large e-book collections from multiple vendors but they must also contend with the management of stand-alone e-books, too. In some instances, the process involved in troubleshooting stand- alone e-books can potentially be more costly than the resource itself. Calculating the amount of time individuals at various hourly rates spend troubleshooting a problem can be a motivating incentive for advocating for uniformity in e-book access and licensing.

For example, a customer recently contacted a librarian with concerns about accessing an e-book. We expended an immense amount of time documenting, understanding, troubleshooting, and solving the problem. In the end, we discovered that users had to create an account to access the resource, and in working with the representative, we were able to change the access so that titles are accessible by IP range, which is our default access preference. In this situation, we recognized that our processes operate independently and not in synchrony. The best solution for this type of issue is to make all work processes transparent so that all library staff can easily understand the purchase agreements and troubleshoot any issue in the least amount of time. In this documented incident, the combined amount of staff time required of our library and vendor to troubleshoot a problem with one resource was disconcerting and more so when the user's time is factored in. Had this customer not contacted us, we would not have known that a problem existed. It is even more disturbing if similar problems occur with the multitude of resources libraries make available because resources will not be used and the money spent on them will be wasted.

Acquiring and installing e-book collections seem to require a lot of cooks in the kitchen in order to coordinate the considerations and accommodations of both the users and the librarians. When it comes to accessing and navigating e-books, the kinks are still being worked out, and undoubtedly vendors will continue to improve their products if they are to remain competitive. The discussion that follows identifies strategies to minimize users' frustrations when their reasonable expectations cannot be met.

MANAGING USERS' EXPECTATIONS OF E-BOOKS

It seems perfectly reasonable to expect to be able to access an e-book with one click and to expect that any plug-ins or devices necessary to access an electronic resource

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would be imbedded in the technology. Often the speed at which information can be found in a print resource is contrasted with how quickly information can be retrieved from its e-book counterpart, and it seems reasonable to expect that retrieving information from an e-book would be quicker. However, some very reasonable expectations users have of e-books currently cannot be accommodated. When it comes to managing users' expectations of e-books, the best defence seems to be a good offense.

Sixty percent of those who responded to the 2007 ebrary survey indicated that their use of electronic resources was impeded by technical difficulties. While we suspect that more than a few of our users would concur with the above assessment, we do not have the data to substantiate our suspicions. Our supposition is that in order to minimize users' frustrations caused by technical difficulties and manage their expectations of e-books, a pre-emptive marketing strategy disclosing the known strengths and weaknesses of the resource should be widely shared with the user community. The concept of a pre-emptive marketing strategy emphasizing a resource's strengths and weaknesses with an emphasis on its weaknesses was suggested by a frustrated mechanical engineering student who had tried for 30 minutes to use one of our e-book platforms to no avail.

According to the student, fully disclosing the technical difficulties one is likely to encounter when trying to access the library's electronic resources can be used as a pre-emptive strike to lower a user's expectations of a particular product while the kinks are being worked out. Why would we purchase a resource that we promote by highlighting the product's flaws? The short answer is that to give a new technology or resource the chance it needs to work out its kinks requires constructive and useful feedback from the user population—and lots of patience.

Casting the user in the role of critical evaluator makes users a part of the solution of bringing forth a product that meets their expectations. One is more likely to be tolerant toward a new product if one is asked to critique the product and provide feedback to the vendor. It has been noted in several engineering disciplines that when new electronic resources are simply publicized without any disclaimers of potential problems, they tend to generate more complaints. On the other hand, when new electronic resources are promoted as a resource of the future still in its developmental stage, the feedback received is more constructive, and the users do not appear to be as frustrated.

Managing product expectations typically requires being proactive in the dissemination of information that can be used to pre-empt or negate negative associations with a

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product whose technology has not been sufficiently developed to accommodate the reasonable expectations of its users. While being proactive in managing expectations of a product will not lessen the desire for specific functionalities, it may buy some time for the technology to catch up with the expectations.

In other instances, we fail to factor in how the campuses' changing technological environment and policies will impact our electronic resources. Recently a number of the staff computers on campus were configured to prevent staff from installing and updating software and plug-ins. Al- though the staff had been informed that their "computer administrative privileges" were being restricted, the full implications of this change were not readily understood by all. Immediately after the release of a new e-book platform, we received a stream of technically related inquiries complaining that the resource was not working. The problem was that a plug-in had to be installed and the user did not have permission to install the plug-in. The inability to download software plug-ins necessary to access certain electronic collections was frustrating to some. This served as a reminder that librarians can be proactive and contact the campus IT departments and make sure that the plug-ins necessary to access a given resource are already installed on public and staff computers.

Other problems have arisen as users try to take advantage of e-books. For instance, reference books are organized so that information can be looked up quickly once you understand the organizational structure of the resource. Yet, to some engineers, the problem with the types of e- books used in their disciplines is the e-books' inability to mimic their print counterparts in the quick retrieval of data—or so they think. Once users consider the enhancements that allow them to manipulate data and use other interactive tools as well as the capacity to create new data sets, it is no longer as important that the electronic version mimic its print equivalent.

COMPUTATIONAL CAPABILITIES OF E-BOOKS

Several instructors were surprised to discover the advanced functionality and interactive tables now included in some reference e-books. The instructors wrongly assumed that a particular electronic reference handbook was the exact equivalent of its print counterpart. Therefore, when instructors were encouraged to use the library's e-books for their course reserves, most did so without thought. Shortly thereafter, one instructor complained that he was blindsided by the additional capabilities of a particular e-book. Apparently, the instructor regularly issued a certain type of problem for extra credit only to discover that an e-book, which he listed on his syllabus, could

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calculate the problem for the students. To the instructor's dismay, no one alerted him that all students had to do to earn their extra credit was to plug in a series of numbers and the system would calculate their problem.

Now, because instructors cannot ensure that students are not using the e-book to calculate their homework problems, other methodologies for measuring one's ability to do manual calculations have to be devised. This is a legitimate concern for educators trying to build rudimentary skills. As e-book tables become more interactive and pervasive, routine homework assignments designed to build a particular skill must be reconstituted so that the development of the skill is not lost. When this concern was brought to one of our engineering librarians' attention, the frustration expressed was the instructor's inability to stay on top of the growing functionality of e-books with all their other responsibilities. There seemed to be an expectation on the part of some that those responsible for the purchase of these e-resources should keep abreast of how future software enhancements could impact the way course material is taught. However, as e-books gain more enhancements and functionality, it becomes increasingly difficult for librarians to maintain the skill level to teach students how to use these interactive enhancements.

Finally, the dependence of e-books on technology provided by the Web or university network makes it vulnerable to accusations of dysfunctionality when in fact problems may have nothing to do with the resource itself. When the user tries to access an electronic resource and it does not work, the user assumes the resource to be at fault and never digs deeply enough to re- solve the problems and give the resource another chance to prove its wealth.

CONCLUSION

The list of things that need to be negotiated, anticipated, maneuverer around, and tested continues to grow proportionally with the increasing functionality of e-books. First impressions are hard to dispel when formulated by reasonable expectations that fail to materialize, and trying to erase a negative first impression is like trying to get the genie back into the bottle. When it comes to unveiling new e-books, it is extremely important to explain to customers what they can expect. To err in determining the correct technical requirements necessary to operate a particular product may be human, but trying to convince users to give that same product another look typically requires a Herculean effort. Informing users up front of technical difficulties that may impede their use of e-books is just a good marketing strategy.