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Web Information Architecture

A Very Inclusive Practice

Abstract

Web information design, or information architecture (IA), is a critical aspect of the organizational use of the Web to deliver information and to communicate with clients. It is a relatively new instance of information organization and, although it draws from traditional practices such as library and information science, Web information architecture has its own characteristics and unique contexts. The practice of Web information architecture must forge its own identity. This research paper contributes to a greater understanding of Web information architecture as a practice that requires myriad conversations, negotiations and collaborations as it is carried out in large organizations. It is also a practice that is undertaken by multiple and diverse people who all make a contribution to the information structures of the enterprise website.

Introduction

This paper reports research that is situated in a maturing era of organizational use of the Internet to inform and communicate. At the forefront of an organization's use of the Internet is its official website, which represents a digital information channel of increasing significance and audience demand. The corporate website presents the opportunity for rapid publishing of extensive amounts of information to a global audience. From humble beginnings, the world wide Web has emerged to become a major communicating and informing medium that every organization is compelled to attend to as part of its public communication. Information structures are a front on which "the struggle for commercial supremacy through information is being fought" (Evernden & Evernden 2003, p. 5).

Web IA is a term that is used to describe both the information design process and the outcome of that process (Rosenfeld & Morville 2006). Intrinsic to the nature of hypertext, a website will have an information structure regardless of whether an organization consciously implements a process for Web IA and structures their Web information with awareness and expertise.

Thus, the information structures of a website may present either an optimal information space or a frustrating and unsuccessful experience for its users.

The provision and structuring of Web information is relatively new in organizations (Rosenfeld & Morville 2006, p. 8) and the unstructured information of the Web lives close to the surface of an organization's entire repository of information. Many individuals within an organization contribute to its creation and ongoing existence (Morrogh 2002, p.). Whilst other information organization practices have informed the practice of Web IA, they remain distinct from the realities of structuring information on corporate websites. The importance now attributed to an organization's website requires a deeper knowledge and closer investigation of the context in which Web information is structured.

Literature

Because organizational use of the Web for providing vast quantities of information has become mainstream, significant efforts have been made to define and optimize a design method or systematic approach for the design of online information spaces (Rosenfeld & Morville 1998, 2002; Rosenfeld & Morville 2006; Wodtke 2003; Batley 2007). As a result, a maturing design method and practice of Web IA has emerged (Hider et al 2009). Rosenfeld and Morville's book for practitioners, "Information architecture for the World Wide Web", first published in 18 and now in its third edition, is described as a "milestone" in the development of Web IA processes and as the "bible" for the practice of Web IA (Dillon & Turnbull 2005, p. 1).

Intentionally avoiding the pitfalls of language and representation, Morville and Rosenfeld (2006), consistently offer the set of four descriptive and defining statements about IA that they first proposed in 18. They suggest that this approach serves multiple perspectives and approaches to IA itself and that the ensuing discussion of these statements is what truly conveys the meaning of IA.

1. the combination of organization, labeling, and navigation schemes within an information system;

2. the structural design of an information space to facilitate task completion and intuitive access to content;

3. the art and science of structuring and classifying websites and intranets to help people find and manage information; and

4. an emerging discipline and community of practice focused on bringing principles of design and architecture to the digital landscape (Rosenfeld & Morville 2006, p. 4).

Morville and Rosenfeld (2006) propose and document a series of phases that form a structured approach to the practice of Web IA. They consider Web IA as a project with the sequential stages of research, strategy, design and implementation. The project of Web IA concludes with an acknowledgement of continuous evaluation and change that Morville and Rosenfeld (2006, p. 232) entitle "administration". A sequential approach where research, strategy and design outcomes and deliverables are developed via a "structured development process" is presented by Morville and Rosenfeld (2006, p. 231). Consultation with business stakeholders and website audience is recommended throughout. Yet the main modality for the practice of Web IA is a structured, project-based, process-oriented methodology. The activity of Web IA is considered the domain of dedicated information architects.

Eschenfelder (2003) examines the work of organizing online information in the enterprise, in particular the conflict involved in developing a Web IA for a large organization. According to Eschenfelder (2003, p. 420), Web information structures are covert, powerful, ubiquitous and influential and "represent content, direct attention, influence perception and promote or detract from customer satisfaction" Eschenfelder (2003) writes that a website must often serve multiple audiences, which in turn leads to goal conflict between different organizational sub-units with different target customers. Eschenfelder's (2003, p. 421) research reveals information structures as "fields in which issues of organizational power, conflict and control are worked out". Her study goes some way to providing an understanding of the organizational negotiation involved in the development of an IA for a public facing website.

In his research into the management of enterprise websites, Cox (2007b) reports that local bitter tension between information technology and marketing is evident. Conklin (2005, p. 30) suggests two extremes of design work within organizations. Firstly, there is the perspective of need and desire, which is often expressed as what "ought to be", and is more likely to be held by a marketing department (Conklin 2005, p. 30). It is complemented by the perspective of "what can be built" (Conklin 2005, p. 30) within the available resources, knowledge and timeframe that is often represented by

the technologists. These two polarities of design need to be reconciled in an elegant way in any design process, claims Conklin (2005). Organizations must take care that design processes, such as Web IA, do not become non-productive interdepartmental wars with neither worlds understanding the other nor the whole (Conklin 2005, p. 32).

Participatory design theory (Kensing & Blomberg 1998; Kautz, 1996) introduces the notion of greater participation by organizational workers in the creation of information spaces. It does so by considering the worker as user of any system. Mumford (1997) describes two forms of worker participation in the creation and use of information systems. The first form is involvement during the design and development phase and the second is the opportunity to make choices and decisions when using the system. Active participation by organizational staff in the design of any system that they will use is recommended with the promise of a "more human, creative, and effective relationship between those involved in technology's design and its use" (Suchman 1993, p. vii). Participatory design theory has its roots in a commitment to workplace democracy and to worker's participation in the design of interfaces and systems that will become integrated into to their workplace activity (Muller et al 1993).

Mumford (1997) reports that participatory design activities are frequently initiated by management in order to solve particular problems. Thus participation remains invited and initiated by managers and design professionals. It is a conditional and controlled participation and the worker remains outside the big-picture development process as well as the detailed work. Participatory design does not extend to include the multiple stakeholders in large organizations who are not the users of the information environment yet have vested interest, make significant demands during the design process and are frequently empowered with the access to create and make changes themselves. Practice theory (Gherardi 2006) is found to be a more fitting theoretical frame for the organizational activities and actors that collectively produce an enterprise website.

Shaw (2002, p. 11) describes practice as 'patterns of activity that can be mapped and grasped as wholes distinct from the persons acting in particular times and places' whilst Bjorkeng, Clegg and Pitsis (2009, p. 145) view practice as 'novel patterns of interaction developed into predictable arrays of activities, changing and transforming while at the same time continuing to be referred to as "the same"'. The nature of practice is not individual, nor is it universal, write Brown and Duguid (1996, p. 51). It is very much a situated, collective activity.

Gherardi (2009b) sees practice as a powerful concept in organizational studies

because of the plurality of its semantic possibilities. 'Practice is a malleable term which can be put to numerous uses and employed to denominate many aspects of the phenomenal reality under study' (Gherardi 2009b, p. 116). Gherardi (2009b, p. 115) sees more to practice than just 'routine' or 'what people really do', with the actor as central to the notion. For her, practice is located in the significant pattern of how conduct or activity takes place. 'Theories of practice assume an ecological model in which agency is distributed between humans and non-humans and in which the relationality between the social world and materiality can be subjected to inquiry' (Gherardi 2009b, p. 115). Objects, tools and artifacts embody knowledge and 'anchor practices in their materiality'. Thus, practice-based studies are well placed to extend from social considerations to include the technology of work.

Geiger (200, p. 132) explores 'practice as epistemic-normative concept'. Gherardi (2006, p. 34) agrees with the notion of practice as ordering and normalizing, defining practice 'as a mode, relatively stable in time and socially recognized, of ordering heterogeneous items into a coherent set'. She adds that practice constrains and forbids some alternatives and choices, while approving others as preferable or easier. Thus, practice becomes a normative construct where 'actors share a practice if their actions are appropriately regarded as answerable to norms of correct or incorrect practice' (Rouse 2001, p. 10).

Practices are made socially recognizable or legitimized by being stabilized and institutionalized (Lawrence & Suddaby 2006; Gherardi 2009a, p. 356). Practices stabilize to provisional agreed ways of doing things – even if that understanding is contested (Gherardi 2009a). A negotiated, shared and recognized way of working collectively means that practices shift and evolve from a relatively firm, but not fixed, foundation. In this way, the identity of both practitioners and the practice is established and can be observed from outside the practice (Gherardi 2009a, p. 356).

Research design

Using a grounded theory methodology, this study explores the realities and complexities within organizations as they strive to make effective use of the enterprise website for information delivery. The research quests for a deeper understanding of the way that Web IA is enacted in large organizations. Grounded theory provides a systematic and explicit process for conceptualization from data—theory is constructed (Charmaz 2006). Constructivist grounded theory (Charmaz 2006) has enabled the study of Web IA processes within the enterprise to be taken into a social

realm—involving people and the complex interactions involved in achieving the information structures on an organization's website.

Seven large organizations that use the Web as a significant information delivery platform to communicate with and provide service to their clients were investigated in a multi-case study. The criteria for selecting an organization were that it had a public-facing website and that the website be information-rich. In order to establish that the organization was of a considerable size, only those with over three hundred employees were included.

There was no other unique or unusual attribute of any case that was considered in its selection. Each studied organization might well be considered a typical 'instance drawn from a class' (Adelman, Jenkins & Kemmis 183, cited in Merriam 18, p. 28).

Organizations were not drawn from a particular sector; rather, they were selected as they fitted the three criteria mentioned above. All of the organizations were Australian and, whilst some of the organizations had a presence in more than one Australian location, field work took place in the cities of Canberra and Melbourne. All other conditions and circumstances within the studied organizations were considered as the contextual background for this study of the situated practice of Web IA. It eventuated that organizations were drawn from the tertiary education sector, government, research institutions and collecting agencies.

A qualitative approach to data collection was used throughout the research. At each organization the staff most concerned with Web IA were asked as a small group to focus on the question: 'How is Web IA carried out here?' and to tell their story. The size of the group varied across organizations from two to four research participants, and whenever the roles existed within an organization, the group included the Web manager and Web information architect.

Narrative is used to reveal information that might not be attainable by more structured means and the interaction between participants is likely to trigger additional insights (Hoyle, Harris & Judd 2002). The complex story of achieving Web IA in an organizational environment is one that could be constrained by more structured approaches to data collection. The narratives of practice were digitally recorded.

Follow-up semi-structured interviews about the way that the practice of Web IA occurs within each organization took place, when required, after the preliminary analysis of the data collected at the group narrative. In

keeping with the grounded theory tenet of theoretical sampling, the need for follow-up interviews in each case study to provide the information needed to build or disprove emerging concepts and theory was identified following the analysis of the earlier group narrative data.

Similarly, the most appropriate interviewee and the interview questions and structures were determined for each organization after the collection and analysis of each initial group narrative data. Of the seven organizations studied, the researcher determined the need to conduct follow-up interviews in four organizations. Again, a digital recording was made.

The study also examined any Web IA documentation that existed within each organization – be it policy, process, checklists or best practice documents. Any internal or external documents that guided the work of IA within the organization and that could be made available to the researcher were collected and became a component of the analysis. Whilst not coded, like narrative and interview data, the IA documentation was scrutinised for new insights and confirmation of emerging theory. IA documentation provided another perspective on the practice of IA in the organization.

Data collected in the studied organizations were transcribed and open coded using NVivo version 7 as a supporting tool. From very close and detailed scrutiny of the data, meaningful, provisional codes were created (Charmaz 2006, p. 48). Focused coding (Charmaz 2006, p. 57) then gave prominence to the most significant and frequently used open codes that were continually tested across the large data set. Higher levels of abstraction were sought in the sorting and clustering of codes, resulting in named categories or concepts that form a constructed theory of practice. A number of those concepts, components of a larger generated grounded theory, are discussed in this paper.

Findings

Facets of the emergent grounded theory resultant of this research are discussed to reveal a broad canvas of people who are involved in organizing information on the Web and the myriad negotiations and conversations that are needed to achieve information delivery via the enterprise website. Organizational interactions that are more intricate and inclusive than a process of consultation are revealed.

An ongoing, dynamic conversation about Web IA exists in organizations, a dialogue that originates from many parts of the organization and does so in its own time. The negotiations of designing information structures for the

organizational Web have a life of their own and are often steeped in conflict. Optimal Web IA is frequently compromised and an expert in Web IA is not always driving the communications decisions and activity.

Who Does Web IA?

Two of the organizations studied had in-house roles for specialist Web information architects and looked to the person in that role for expertise in Web IA. These organizations made strong claims that Web IA expertise embedded in an organizational context served their organizations best. They insisted that a strong understanding of the organizational culture supported the work of Web IA. It was also noted that the employment of people with this expertise in IA was difficult to achieve:

> *Then actually finding the good staff! Over the last few recruitment rounds we've done, we found suitable people for, you know, markup and stuff, some great people, but as far as IA, no.*

Three organizations looked to external expertise in the form of consultants or contractors for any large-scale IA developments or redevelopments. When significant tasks in IA were faced, a decision was made to employ external expertise: "I think we probably would get a consultant at that point". Web staff in these organizations maintained that their own level of knowledge and skill were adequate for ongoing and small-scale changes to website information structure:

> *I suppose if we did a new iteration of it, I would probably contract with an IA person, but on a day-to-day basis, I don't think it's required in the organization. I mean to an extent we can be self-sufficient, but we're not going to have the extent of skills that the consultant has. Obviously that's his speciality and that's his area of expertise.*

A strong rationale for this approach was presented. Expertise, it was claimed, would wither if housed and therefore isolated within the organization. The trends and changes in Web IA required "someone going back out into the big wide world (â€¦) on a really regular basis" for exposure to new developments in the field, to embed novel approaches in their repertoire and to safeguard their level of expertise. Without this constant revisiting of the broader world of Web IA and ongoing experience in a variety of contexts, it was argued, the investment in Web IA expertise would be lost. This Web manager claimed:

> *In a corporate sense it is almost impossible to maintain world-leading expertise in any particular area. The moment you come in, you are only ever focused on the needs of one organization. So even if you did have that expertise, you will*

> *start losing it right away and replacing it with expertise about the organization itself and its particular needs.*

Those with Web IA responsibilities who employed external expertise were also well aware that their ongoing involvement was essential in a significant redevelopment project. Their role would be one of collaboration and continuity, working alongside imported expertise. There was a strong internal sense of responsibility for an IA that was developed by an external specialist. In the following statement, a Web manager retained a sense of control and responsibility for the IA issues he faced. He incorporated external expertise in his solution, rather than handing over the problems and challenges ahead:

> *So we have got all those issues and we needed to find a way forward with it. So we decided to let the market help us through that to go and access the best expertise that we could.*

There was a notion too that expertise in Web IA resided in the collective rather than the individual. Expertise was recognized as being embedded in collaboration. Acknowledging that "there was not an IA absolutely focused and expert person", one organization went on to express that they were "trying as a whole group to bring it together". Another organization sought expertise from the collective:

And also a lot of the IA expertise or the way that we develop the IA is through this whole massive collaborative process (â€¦) Initially we pulled in librarians and, you know, different bodies from around the place and came up with it, and now we are sort of doing the same thing again, but it is more using these external people.

Two organizations rejected the need for any expertise in Web IA. Web staff with developing skills in structuring online information were responsible for the majority of IA work and decisions. This denial of the need for Web IA specialist skills occurred at different levels in these two organizations. In one organization, it occurred at the level of Web manager. In the other organization, which has no Web manager, the immediate manager above the cluster of central Web staff saw no need for Web IA specialist skills. This comment revealed the lack of expertise:

> *Can be tricky if you have got a bit of information that doesn't really fit anywhere. Shove it in 'about us' seems to be the mainâ€¦ when the information doesn't fit in a logical place.*

In many of the organizations studied, there were pockets of IA carried out by novices, frequently working on the lower tiers of the enterprise

website. “These people think it should be part of their everyday job, doesn’t require specialists”. An expert represented restriction of what they were doing themselves, someone who might tell them what to do and highlight their inadequacies. One research participant suggested that an expert in Web IA would present a threat to freedom on the Web for many novice and occasional Web IA enactors.

A centrally employed information architect described his observations of “manager-sent information design or ego-led design”. This occurred when administrative staff arrived at meetings that were held to discuss new sub-sites, with fixed information designs which were “basically the manager dictating whatever they want”. The conveyors of the manager-sent design did not have the experience or language to challenge or object to the desires of their superiors – who also lacked in Web IA ability. In dialogue with the central information architect about the design, a typical response was: “I don’t know, the boss or the manager or somebody said it had to be there”.

Thus, in large organizations, a range of Web IA work was carried out by various people with limited knowledge and experience in structuring online information. They were sometimes disconnected from expertise and were intent on achieving Web information structures, particularly of sub-sites, by their own initiatives.

Collaborating in Web Information Architecture

Much of the work of designing a website’s ambiguous taxonomies to serve the business and its clients takes place in small impromptu teams, sometimes with the participation of IA expertise. There is no predefined membership of these teams—they are formed as needed with the most appropriate membership available at the time. The possible inclusion of a central Web professional with IA expertise in such a team varied greatly across the organizations studied. At one extreme, devolved business units have complete control of their IA and do not involve central expertise. More often, however, there is an element of collaboration and teamwork between central IA expertise and devolved business units as a new site is planned or a redevelopment undertaken. organizations revealed a sense of shared responsibility for and participation in Web IA:

> *It is working together. It is us bringing our expertise in Web and in design. It is them bringing their expertise in the business and also the communication priorities that they face, and trying to meet in the middle and come up with something.*

The IA capability of a central Web team finds a collaborative and integrative

style, working alongside the business units who are the knowledgeable owners of the information that is provided on the site. Centrally employed information architects are called on to encourage, transfer their skills and mentor the people in business units to do the work of IA as effectively as possible. This is consistent with the findings of Cox (2007a, p. 776) who writes that "this work was carried out in a context where there is little direct formal power" and required cajoling and winning consent. One information architect described his way of working work as a "velvet glove" approach:

> *It is all about persuasion, horse trading skills. It is not like they say in the textbooks where you can go away and do this research and come out with some wireframes and then that is kind of it. That is the easy bit really.*

And his manager agreed with this approach. Consultation and cooperation is her preferred way of working and she is very convinced that the work of Web IA would not be supported by conflict or confrontation that was initiated by central Web staff.

> *That is the reason why we employed him—seductiveness. I think the approach should be consultation first, and confrontation as the last resort, and we probably wouldn't bother unless it was something that seriously embarrassed the organization.*

Influences and constraints from the world external to the organization impacted on the practice of Web IA. The nature of collaboration and involvement must be flexible and adaptive to the subtle and political situations that arise in the business world. Political circumstances outside the immediate sphere of the practice of Web IA can exert unknown influences. Wisdom is demonstrated by this Web manager:

> *There's another area, a redevelopment there and that one's sort of gone a bit pear shaped but not anyone's reasonable fault, the politics maybe also and I think it's probably more, what's the word, it's probably better for us to make sure we're there or maybe be seen in a way a bit more, you know, in-between the IA and, and the line area. It's the nature of the content they're looking at and the actual political thing in the real world at the moment.*

At times the negotiations of Web IA were reported with a cooperative spirit. Interactions and communications, although at times lengthy, were frequently harmonious and achieved consensus. Casual communication and discussion about Web IA was common place and, when conducted in the absence of formality, reasonableness often prevailed. A Web information architect was able to gently negotiate an information design to avoid it being six levels deep:

> *I have talked to people, just not formally and just said, "Look you don't need*

> *to have six levels in this menu, it is okay, just let it go". Just explain the issue. Usually it is okay to sort of informal discussion or a chat and they will go (...) as long as they understand your rationale. It is when you start making it formal and calling people in for meetings, they can get quite defensive.*

Tensions Arise

As much as central Web staff sought to avoid conflict with business stakeholders, on occasion tension and conflict arose in the practice of Web IA. Relationships were not always harmonious. In one organization, a Web team was left to implement the dictates and directions of a senior executive group that were authoritative and unyielding in their requirements of corporate Web information structures. The IA did not give prominence to divisions within the organization and created conflict that was not resolved when the website was made live. The Web information structures that were launched delivered legacy tensions and subtle ongoing relationship sensitivities that required consideration in the ongoing conversations of Web IA:

> *When we first launched, the divisions were very down, about five clicks deep into the website and you wouldn't believe how much angst it caused us. And we ended up pulling them up and giving them a direct link from the home page (â€¦) Politically, it just wasn't worth it. There is still some, I think, bitter memories perhaps, in there, that, those are hard to get rid of (...)*

The conversations of Web IA are not restricted to a central Web team and business stakeholder dichotomy. Goal conflict (Eschenfelder 2003) leads to tension and combativeness amongst the business divisions of organizations. This study confirms the competitiveness between the sub-divisions of an organization for prominent presence within Web information structures. The business to business competition within the processes of Web IA can place central Web staff in the role of facilitator or adjudicator. As a shift in business focus triggers a need for change in the high level Web IA, the jostling for position begins anew:

> *Normally the area would drive that change and say "we need something to happen with this". The problem is that would also mean losing something from those top six positions as well, so they're fighting very heavily that xxxxx should be up there on the top page and yyyyy should still be there and things like that. So it's probably more those areas who would kick up the fuss and say "well, why are we being moved down here?"*

Several organizations had implemented and were trying to maintain a thematic or topic-based organizational scheme at the highest level of their website's IA. Multiple organizational sub-units contribute to a single theme

and any one sub-unit may be involved in a number of themes or topics. An ability to collaborate proved to be essential to lift a website out of an organization structure and present a thematic scheme. A workplace based on silos and lacking in integrative structures and strategies caused gaps and replication in topic-based Web IAs. The lack of collaboration in the workplace is reflected on the Web:

> *This section replicates bits over here, so if we try and do it holistically do we take that bit out here and have it over here or do we bring that bit out there and bring it in here? We don't know, I don't know what the right solution is for that, so that's an issue, so that is a silo type thing and people not talking to each other.*

Responding to the Business

The business stakeholder with no expertise in IA has a strong sense of ownership of the process and the outcome. The business owner also brings a sense of urgency in the provision of appropriately organized online information. The study reveals that organizational use of the Web for information delivery is characterized by volatility and a need for reactive changes to online information and its structure. Business stakeholders are well acquainted with the potential immediacy of Web publishing and make significant demands on those who have responsibility for online information delivery. This is revealed in a typical comment from a research participant about his work with business stakeholders:

> *"Now this website needs to be live this Wednesday", and so "well okay, let's get it up and we'll worry about it later".*

This study reveals the need for agile and organic change to an organization's website—in a timeframe that best suits the business purpose for the information. This type of change was often embedded in the daily activity of organizational life. Varied patterns of activity were developed within organizations for the achievement of small changes to an organization's Web IA. The following account reveals processes that lack formality but that demonstrate a workable approach that has become the norm and that is effective in responding to a reasonable request for change on a small scale:

> *More often they come to us and say "we're getting so many phone calls, is there something we can do to our Web pages to reduce the work that's coming in, inquiries coming in". So basically then we have a meeting with them and we sit down and say "okay what do you want, what have we got, what do you want to do, what do you want to achieve?" and try and work out the best way and the best way of laying those things out, the most logical, so it's pretty simple.*

Another type of response needed was to a business change of significant proportion—such as the case of a business restructure, or an acquisition or loss of a function or business unit that must be reflected on the Web in a time-dependent manner. Outcomes of budget restriction or expansion, government elections, change of government, reviews, and changes to the business model all made significant impacts on Web information structures. Restructure and expansion in an organization include the business need to mirror the change on the website of the organization:

> *But I guess it came to a head recently because the department restructured as a result of the budget and xxxxx is now a big thing for the department, and so there's a new division of xxxxx within the department and they wanted that reflected on the home page.*

Where business changes are volatile, so must be the work and outcomes of Web IA. Those responsible for information structures on the Web must respond rapidly to business shifts, large and small. Hence responsive change is a key characteristic of the practice of Web IA in large organizations. At times rapid and substantial changes to the business can occur faster than an IA can stabilize, as discovered by this research participant:

> *Recently two of our divisions shut down and merged with existing divisions and that has generated an enormous amount of workload. So first we had to convert everything through into the new division, and then the decision was made, after the last round of budget cuts, to actually merge that in with other divisions. So just as we were getting near the end of the first job, we had a whole new job.*

Compromising Web Information Architecture

The work and outcomes of IA in its situated context of the business world involve a compromise in which best practices and methods cannot always be accommodated. IA practitioners are forced to compromise optimal outcomes that they know could be achieved with the full application of their expertise. Changes to digital information, especially on the Web, can be made very quickly and a close to real-time informing of a Web audience is a possibility. But this speed of publishing can come at a cost to the quality of the information structures when responding to the business pressure for websites to go live immediately. One research participant expressed this tension between business deadlines and optimal Web IA:

> *We're so flat-out, we're doing stuff we're going "oh, we know this isn't quite right, but it's got to be live tomorrow, we'll put it up, we'll worry about it a bit later".*

The work of organizing information on websites must be agile in order to

meet the business demand. It must also be characterized by pragmatism. The power structures in some organizations allow executives to overrule optimal information structures and an information professional must know when to concede and compromise in these situations. Those who make significant demands of Web and IA professionals in requesting immediate and specific change often have the power and authority to request such responses as indicated in these various accounts:

> *Certainly here and when I worked in other places, the boss has a lot of power and it can basically be the boss wants this and to hell with good IA (...) We get things imposed, we get told to do things because someone decides that's what it's going to be, like definitely!*

The following scenario again reveals a compromise in the work and outcomes of Web IA brought about by power imbalances in relationships. An information design found lacking by central experts was brought to the table by people working directly to a strong authority figure and its implementation was demanded. This information design decision is made by the more powerful person who lacks expertise:

> *All of a sudden the Minister or the Minister's office wanted a page about xxxxx, yeah and he wanted it structured by topic1, topic2, topic3 and topic4 (...) and it, this was the first time ever and so I don't think it was the Minister, but I think it was someone in his office but they kept saying it was the Minister wanted it, so when we went to do it, it was like well this isn't practical, you know, it's missing out all these other things, so we did one this way and "no, no we don't want that" so we did it another way and "no, no" and then it's came back "no we don't want (...)" and I was like "no we're not doing that"!*

It was reported by this research participant that the Minister's alleged requirements, however contrary to best practice and expert advice, were duly implemented. Significant pushback from the expert in Web IA was exerted but to no avail. The availability of expertise was not valued and the quality of the implementation suffered. A rationale for the demanded Web IA was not provided. A very reluctant information architect conceded his know-how to the more powerful business stakeholder.

Compromise is a common aspect of the participatory nature of Web IA. Acceptance that power and political situations would intervene in an optimal information design was widespread amongst research participants. In one organization, in order to achieve a whole of organization website, there were political trade-offs in the information structures of the new website. Yet there is acquiescence for the situation in the comments of this Web information architect and knowledge that a big picture improvement that accommodates some politically based minor imperfections is a step forward:

> *xxxxx and yyyy actually had in the past going a long way back had their own domains and their own websites and they were separately managed, and then that was brought together under the departmental banner. So I guess there were some compromises made for political reasons in terms of coming together with the new IA, in terms of reflecting that.*

Engaging with Experts

When business owners of devolved sub-sites did seek out available expertise in Web IA, there was sometimes a tendency to disengage with the process. "They just think an external person is just going to blow in and fix it and magically sort everything out". This was interpreted by one research participant as a fearfulness of IA. Web IA was seen as a mysterious and difficult process best completed by a "guru with a magic wand".

> *"Participating in a practice entails taking part in a professional language game" because language transmits propositional knowledge of practice (Gherardi 2006, p. 23). Speech acts are units of action, writes Gherardi (2006, p. 23). The language of Web IA used in organizational context is then part of the practice and confusion in the use of language is noted in this research :*

And the whole terminology thing is very confusing to everyone. IA to me means wireframes, you know, structure charts, navigation and all that sort of stuff, but I don't know if that means, that's IA to you or others.

Language and hence communication about Web IA is fraught. At the top of the pyramid of language pertinent to Web IA, the term architecture frequently required explanation. "Usually I'll mention in an email, 'information architecture (structure)' and I usually say structure and navigation but (...)". Quickly a short, pre-emptive attempt at clarification may need re-explanation:

> *Then I say, if they still don't understand, "you know like a table of contents in a document, this is how it's laid out, this is how the information is related, you know, these are a subset of this bit" etc. So, and you know that might not be technically correct but (...)*

Web staff are aware that their language may not be appropriate for other organizational staff involved in website information provision and the special words and metaphors of Web IA form barriers to communication and collaboration. This awareness triggered attempts to improve communication by clarifying and softening the language of Web IA:

> *And so when people say "oh we need to design a new site", I say "okay what do you mean by design?", you know, "oh we just need a new look and feel" so there's all those different terminologies which are being used by different*

> *people and mean completely different things, so we're trying to get a common vocabulary across for all of the organization.*

The mystique of Web IA continued in the tools and artifacts that were used to communicate design to stakeholders. It was noted that wireframes, site maps and taxonomy diagrams did not convey a conceptual picture of information structures to the majority of people with an interest in the design, especially those that make decisions:

> *It's not enough for them to feel confident that if they approve that thing they've done the right thing, it's not until they actually see it in the design, in a graphic design, it's not until they see that that they are happy to sign off on the structure.*

The conceptual leap to understand a skeletal, yet logical, information design separated from its eventual website was frequently not possible. "They want to, they can't go there", reported one research participant. Low fidelity diagrams of Web IA outcomes were not useful in dialogue with many stakeholders who could not separate information and visual design. And when presented with a higher fidelity design, there were other abbreviations and short-cuts that caused concern: "even to the extent 'why is it in Latin?' you know back to that sort of thing, it's, it's a real big problem".

Marketing and Web Information Architecture

This research reveals a fractious relationship between the marketing or public relations functions of an organization and those whose focus is on optimizing the Web information space. Numerous accounts of opposing perspectives were reported and unrealistic expectations that could not be achieved by Web staff. There were also instances of the boundaries of responsibility for work not being well enough defined to create productive working relationships and successful negotiations of Web IA.

Conklin's (2005, p. 15) theory of the "polarity of design" is at play in the organizational use of the Web. The research participants in this study expressed the dilemma and difficulty of implementing the espoused marketing needs and desires in Web information design. They noted the tension around what was wanted by marketing and public relations departments and what they, as the Web team, could reasonably achieve. One of the areas of disconnection and discontent was the time frame of delivering the expectations of the marketing department.

In one organization, the marketing unit required the global implementation of a newly designed template that housed IA components. It was not plausible or rational to expect this requirement of the marketing department

to be implemented in the desired short time frame:

> *The tension tends to be, for marketing communication, centred around speed of execution for certain things like—"make all Web sites comply with this new template". Well, this doesn't happen quickly, because, well, we don't look after all of them anyway and you need propagate that down to people that aren't necessarily driven in the same sense that the marketing communication (...) I think that there is also tension around the speed of innovation side where the marketing efforts tend to be fairly short term focus and very, I guess, driven by response cycles—we need this thing now!*

"Any design problem is a problem of resolving the tension between what is needed and what can be done" (Conklin 2005, p. 15). The design of Web information structure is no exception. Understanding that the perspectives of marketing/public relations departments are different from those of other business stakeholders and from those of the Web team is an important requirement in the negotiation of Web IA.

The inability of the Web team to fulfill all the needs and desires of those with a marketing/public relations focus impacts on the relationship between the two areas and the people within them. "The tendency is for the polarity of design to be reflected in a polarity of roles" (Conklin 2005, p. 16). One Web manager expresses the difficulty in managing the ongoing extreme of "what is wanted" by the public affairs department and how it affects his role in managing the Web. He is always the one who says "no" and tensions mount within the organization as a result:

> *The relationship with Public Affairs is fraught, Public Affairs still sees the Web thing, or particularly sees me as the person who won't let them do anything fun, I'm the one that always says "no, you've got to do, think about accessibility, you've got to think about the Australian Government Standards, Web standards etc".*

The perspectives and demands of marketing and public relations departments are just one of the forces that must be kept in balance in designing a website with effective information structures. Those responsible for the design of the Web information space must balance the sometimes competing requirements of multiple stakeholders. The Web is considered a platform for many aspects of business improvement and, as a result, becomes a nexus for multiple and sometimes opposing organizational goals.

Thus an organizational website is also a site of competing business forces. In the implementation of the integration of all business requirements of the website, a Web team is also beset by the need to accommodate technical standards and requirements that exhibit good practice. Accessibility to the Web for people with disabilities, privacy issues, compliance with standards

all sit in the delicate balance of achieving an effective information delivery platform. These requirements also compete and affect the negotiation of Web IA with internal stakeholders, especially those in the marketing and public relations domain:

> *It is a sort of tense area. It can be, particularly around the difference between websites as having usability and accessibility issues and privacy, for example. So we most often have disagreements around, " yes this creative concept might work in the print medium but in fact the contrast is not sufficient to be read on a Web site", that sort of stuff.*

There was strong evidence in the data that the boundaries of responsibility for the Web should be clearly drawn. Working out the defining boundaries of responsibility and making them explicit proved to be an important balancing action in the negotiation of Web IA. In one organization, a Web team presented an example of a well defined set of responsibilities for themselves and the marketing communication function. The components of the homepage could be described in terms of ownership. In these circumstances, with boundaries well established and a shared understanding of who is responsible for the IA, tension between Web and marketing staff were minimal.

The Marketing Communications people are particularly interested in the dynamic content that's on the left side of the page. They produce that content, they are responsible for the content and the branding of that stuff, so that's the audio and video pod casts, the newspaper, media releases, that kind of thing. They're also interested in the three graphic ads in the centre of the page that we have only just introduced. They're happy for us to be responsible for the global navigation, the state navigation, and searching and finding kind of tools.

But in a contrasting situation in another organization the conversations of Web IA were troubled by the lack of clear boundaries of responsibility. The global template for the organizational website was the widely accepted responsibility of the Web team. In the process of a consultant-led development of multimedia objects, the public affairs department extended the consultant's commission to include a redesign of the global IA. The negotiation of Web IA became a "big battle" with the involvement of executive staff in an adjudicating role:

> *We had a consultancy to develop some Flash objects to go into a website redevelopment and the Public Affairs person sort of turned it all around to get the consultants to totally develop a whole new website design template and it was like "no, we've already got our templates, it needs to fit in this" and that ended up being a really big battle (...) that went all the way up to the executive and lots of backwards and forwards and important people involved (...) and it*

was very stressful and all that sort of stuff but it came back on sort on our side.

Discussion and Conclusions

Many people across an organization have strong interest and input into the timely delivery of information to Web audiences. Multiple perspectives, diverse participants and ongoing dialogue in the construction of information structures for enterprise websites are key characteristics and Web IA is best embraced as an ongoing engagement with multiple stakeholders. Traditional information practices are frequently characterized by information professionals who take an authoritative lead and consult others within the organization.

But this is not a suitable balance for the practice of Web IA where the business stakeholder is intrinsic to the work in an ongoing interaction—consultation is too remote. The demand for immediate and agile responses to the information structures that inform the organization's client creates the need for close liaison with the business. Responsive and integrative work with the owners of information for the Web is essential to the practice of Web IA.

Compromise is another key characteristic of the practice of Web IA. There will be occasions when timelines, politics and power will win out over optimal information design. Information on public-facing websites is part of an organization's political stance in society and Web IA is affected by the worldliness of the information that it shapes. Similarly, internal organizational politics impacts on information design.

Restrictive timelines for creation contribute to compromised assemblages of information on the Web. The outcome of Web IA does not always reach the ideals of its expert practitioners. Web IA can be a political and contentious activity — elements of competition for information space are revealed (Eschenfelder 2003), as are the polarities and tensions between marketing needs for the website and its optimal information design (Conklin 2005).

Web IA is conducted by the masses as well as the experts — at times it is carried out by novices in the practice. An organizational website is a collage of these two extremes and all of the information design that occurs between them. These research findings disrupt the traditions of information organization as the closed domain of the specialist information professional.

It makes good sense to expect participation, negotiation, compromise and

close involvement of business stakeholders in the practice of Web IA and to develop processes, attitudes and approaches that enable this to occur. Attending to the extent of organizational participation in Web IA will lead to more valuable outcomes.

Because engagement in the practice of Web IA is undertaken by many and diverse contributors, organizations, practitioners and theorists are called upon to adopt new paradigms and approaches to information organization in the online information space. The new approach must cut across organizational structures and see people working collaboratively and temporarily in shaping Web information. The practice of Web IA is best considered as one in which the varied participation of organizational members is the norm.

It is frequently taken up by the non-expert, and yet strongly influenced by expertise and knowledge. The nature of the Web, and the ongoing, emerging changes to the way that organizations are using the Web, call for a contextually appropriate way of using expertise in Web information organization practice. Expertise in Web IA cannot be remote or distant from the many stakeholders and novice practitioners.

The practice of online information design in large organizations encompasses all who influence the assemblage of information. Participation is widespread and unpredictable. The full inclusion of multiple and diverse stakeholders and practitioners should be acknowledged within the practice. Web IA must be recognized as an intensively inclusive practice and fostered within organizations to function in that manner. As a consequence, the practice of Web IA will continue to develop its own identity and shared understandings.

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