Usability Work in Professional Website Design: Insights from Practitioners' Perspectives

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Abstract

This exploratory study aims to gain insight into how usability practitioners work in professional web design. This is done through interviews and a grounded analysis. The description reported here refers to the wider influence of the commercial context on usability work. This brings to the fore such issues as: the client's influence on work, negotiation between clients and practitioners, the adaptation and use of methods, practitioner expertise and the consideration of 'people' in the usability process. It is believed that this research focus, which moves toward wider issues in practice, is best conceptualised from a system level perspective where the goal is to coordinate resources to add value to the design process.

1 Introduction

This paper explores usability work in professional web design from practitioners' perspectives. The work was initially motivated to contribute to the corpus of literature focused on the issue of method transfer whereby researchers have looked to better understand practitioners to build better informed tools (e.g. Rosson et al. 1988), inform methods or processes (e.g. Bellotti, 1988; O'Neill, 1998), or identify obstacles in method transfer (e.g. Bellotti, 1988; Buckinghamd Shum & Hammond, 1994; Bellotti et al., 1995).

However, whilst remaining faithful to the motivation to develop better accounts of what happens in industrial practice this work has a wider focus that moves away from tools and methods, and more towards a better understanding of activities and issues in practice per se. To support this wider perspective we use Grudin's (1990) observation that there has been an "outward movement of the computer's interface to its external environment, from hardware to software to increasingly high-level cognitive capabilities and finally to social processes" and claim that a similar outward movement is happening in research for practice. This outward movement has involved the technical development of methods (e.g. Card et al., 1983), the transfer of methods to practice (e.g. Blandford et al., 1998), the use of methods in practice (e.g. Nørgaard & Hornbæk, 2006), and wider issues in practice (e.g. Hornbæk & Frøkjær, 2005).

**Table 1.** Table to show the outward movement of research for usability practice.

Level	Focus in usability practice	Example work
1	Technical development of methods	Card et al., (1983) in developing GOMS
2	Transfer of methods to practice	Blandford et al., (1998) in training developers in a novel evaluation technique
3	Use of methods in practice	Nørgaard & Hornbæk, (2006) in studying think-aloud in practice
4	Wider issues in practice	Hornbæk & Frøkjær, (2005) in studying the communication of problems and redesign proposals

We do not make the strong claim that these are the only steps or the right steps of this outward movement, but the weaker claim that this outward trend exists. Also, we do not wish to infer that any level of research

is superior to another; if anything we would wish to stress their complementary nature in supporting usability practice.

This exploratory study is positioned on the outer branches – levels 3 and 4. To be more specific about its focus it looks to draw insight on three (assumed) important elements of usability practice, which includes the before and after of 'usability work': 1) attracting work, 2) doing the work itself, and then 3) communicating work. Fig. 1 illustrates the relationship between these three elements in an input/output style diagram.

Fig. 1. Diagram that shows three important elements of usability practice

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Input:              Process:          Output:
Attracting    ───▶  Doing      ───▶   Communicating
Work                Work              Work
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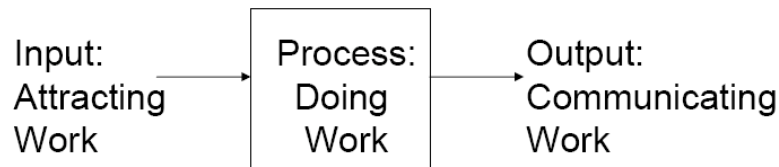
It is believed that the before and after elements of usability work will influence the usability work itself and provide important insights into how usability practice integrates with design and business processes – something essential for the transfer of value in industry.

In terms of limitations it should be noted that this work is focused on the perspectives of usability practitioners involved in professional website design and evaluation. It does not include seeking the perspectives of clients and other important players in the development process. Such work could create a quite different account.

2 Introduction to Related Work sorted by Analysis Themes

As stated above, the literature that provided the initial motivation for this work was centred on method transfer but has moved on to consider how usability is practiced per se. The aim of this section is to introduce the reader to research pertinent for our analysis; in showing what has guided its focus and what has been done already. In many cases the following claims and advice are only assumed to generalise to usability professionals in the web design industry but this remains to be seen. It is also hoped that the current analysis will provide a more cohesive view of these different research areas from the perspective of just one usability domain. Above all

we wish to identify and explore those elements which are significant to usability work from the bottom-up.

The review of related work, presented here, pre-empts the structure developed through the grounded analysis, as the emerging themes have guided what is relevant. This section first questions the problem identification perspective of usability work and suggests a perspective of value transfer that goes beyond method use, before looking at the different processes that designers take in practice. It then covers literature motivated by the importance of relationships and communication in design. We then look at more general expert advice for managing usability in practice. This section ends with the suggestion that a systems perspective may be a way forward in exploring this complex area. Further development of these themes is discussed later in this chapter.

2.1 Methods and Processes

Wixon (2003) believes that the current literature fails the usability practitioner because the premises for valuing usability methods are at fault. Rather than looking at the number of problems a method can detect in an isolated quasi-scientific framework, we should instead concentrate more on the "art of the possible under constrained resources" (Wixon & Wilson, 1997). Here the costs and benefits of using different methods, in real contextual conditions, are stressed. This cost-benefit trade-off centres on usability value, the importance of which has been argued elsewhere (e.g. Cockton, 2004). We believe that a value-centred approach, which considers the transfer of value from usability services, should look beyond method use per se to other influential factors e.g. fostering good working relationships (section 2.2), communicating recommendations (section 2.3), and the expertise of practitioners (section 2.4).

There has been much focus on the process of design but empirical work tends to suggest that this is less structured in practice than the literature would suggest: Bellotti (1988) found that design phases were not strictly ordered, and Terrins-Rudge and Jørgensen (1993) report that designers 'muddle through' stating that: "Formal or structured methods were not employed, developers preferring selectively and opportunistically to use individual parts of such methods in the course of muddling through." It appears that whilst people can prescribe structured methods (e.g. Wixon & Wilson, 1997; Cockton, 2004) there is limited success for these in the complexities of practical contexts.

Rosson et al. (1988) distinguish between a phased and incremental approach in their observations of designers. A phased approach involves a

design phase, then implementation phase with some sort of evaluation phase; in contrast an incremental approach involves a closer design and analysis cycle where the two happen in parallel allowing development in a highly iterative fashion. They observe that projects requiring more control because of either business objectives or group size tended to opt for phased approaches, whereas smaller teams and research projects tended to opt for incremental approaches. Importantly, they also note that iterative cycles can take place within design phases, so a phased approach does not exclude this method of work. Here we see how the context of the project affects its process – suggesting that project choices are not entirely top-down but are influenced by bottom-up external factors.

2.2 Relationships

Redish et al. (2002) includes work by Bailey, Molich, Dumas and Spool who each write on a separate topic. Dumas (Redish et al., 2002) offers a different perspective on valuing methods. He states that the most important factor in responding to usability recommendations in the long term is the relationship between the usability specialist and developers, and proposes that methods can be judged on their ability to foster these relationships. Wixon (2003) criticises the criteria of problem identification in valuing usability evaluation methods, and Dumas' proposal can be seen as an answer to this by offering an added dimension and different role for evaluation methods.

2.3 Communication and Coordination

The importance of relationships in usability work was based on the desire for developers to react positively to recommendations. This same desire can also be seen as the motivation of work on communicating usability recommendations. Molich (Redish et al., 2002) comments on usability reporting problems from an empirical study (e.g. reports that are too long, have no summary, and no positive findings) and suggests an approach that encourages buy-in on the developers' side and the faster communication of results. Dumas et al. (2004) report on a similar study that makes recommendations for usability reporting under four main themes: emphasise the positive, express your annoyance tactfully, avoid usability jargon and be as specific as you can. Adding to the work of usability reporting Hornbæk and Frøkjær (2005) suggest that reporting problems with redesign proposals can have a higher utility for developers. If we assume that the general

goal of usability is to improve systems rather than identify usability issues then effective reporting becomes much more important.

2.4 Psychology and Expertise in Practice.

Wixon and Wilson (1997) provide a wealth of expertise and advice on managing practical usability work that stretches beyond the technicalities of method use, e.g.:

- providing quick feedback to developers so they can be acted on in good time;
- having a lab for publicity value and as a hub of usability activities;
- getting members of the product team to observe user tests to focus them on real issues rather than theorectical or guessed concerns;
- running informal and formal usability tests for different purposes where appropriate;
- adapting highlight tapes to suit the audience;
- maximising the usability of reports rather than their brevity per se;
- giving a short presentation of results soon after testing to give timely feedback;
- creating a template to speed up reporting;
- considering the politics of who sees the test report; and
- having a balance between having the user at the centre of the design process and other stakeholder interests.

The literature is peppered with such practical advice but the authors remain unaware of a dedicated corpus of work on the psychology and expertise of usability specialists.

2.5 Concluding Remarks

Practical advice is embedded in organisational contexts which, as Grudin and Markus (1997) explain, have a strong impact on systems development. They state that these organisational contexts impose constraints that help determine appropriate actions and method use, which relates to Wixon's (2003) remarks that we need the right approach for the context. Gilbert (2004) argues that HCI has moved from the technical, to the user, to the context and needs the further step of a value focus. This form of argument applies here. It reinforces the movement away from technical method development, to the practitioner, to the context in use, and focuses on value transfer in usability practice. Grudin and Markus (1997) note organisational factors that affect systems development (e.g. size, geographical

placement, age, function, culture and environment) and illustrate these effects by using a comparison of a small start-up company whose employees see each other every day with a large organisation that will rely more heavily on formal communications and procedures to work effectively together. This may also impact on the design approach and the methods employed.

The authors are not aware of similar exploratory empirical studies to that reported here, specifically on usability practitioners in professional web design. More focused literature will be introduced with the discussion of the findings from the study. This section has sought to introduce themes that have emerged from analysis which are concerned with wider issues of usability practice.

3 Approach

We have undertaken an exploratory qualitative analysis based on grounded theory as outlined by Strauss and Corbin (1998). The process we undertook first involved defining a scope and questions, interviewing, transcribing the interviews, and then coding the transcriptions. Finally the codes were related to one another to reveal patterns and themes in the data.

This process was iterated to further refine the themes that describe the data (see table 2 for details). This approach was taken as it lends itself to the exploration of contextual phenomena through inductive means. It complements idea generation and experimental approaches to research as it has the potential to map out important factors and relations in real world environments.

Grounded Theory differs markedly from quantitative studies, an important aspect of which is detailed by Yardley (2000, p. 220): 'Whereas quantitative studies typically rely on procedures such as standardized measurement and random sampling to ensure "horizontal generalization" of their findings across research settings, many qualitative researchers aspire instead to the theory building work of "vertical generalization" i.e., an endeavour to link to the abstract and the work of others […].' In the same way this work has incorporated literature to define the research focus and to crystallise the abstracted insights that emerged from the data.

Table 2 describes detail of the Grounded Analysis; table 3 describes the semi-structured interview topics; and table 4 outlines the interviewee profiles.

Table 4 shows the three sorts of organisations that were sampled: full service agencies that are involved in the full design of websites for external clients, from analysis to implementation; usability consultancies that

specialise in usability work and provide services to external clients; and in-house services that work internally within a wider organisation e.g. a large department store.

Table 2. Details of the Grounded Analysis.

Section	Detail			
Number of:	coders	interviews	codes	quotations
	1	8	77	1508
Literature involvement	Literature was reviewed to inform the analyst's understanding and help focus the interviews. It was also used to inform and crystallise insights as the analysis developed (Strauss & Corbin, 1998, p.96)			
Theoretical sampling	Interviewees were chosen for their industrial experience. As the analysis matured interviewees with more experience were involved. This was done for practical and theoretical reasons: people with less experience were easier to access, and senior practitioners were involved when the analysis and questions were more mature. Interviewee profiles can be found in table 3.			
Interviewing procedure	The interviews were semi-structured and an hour long each. Guiding topics can be found in table 4. Topics were probed in an opportunistic fashion. Interviews were left days or weeks apart so analysis could be conducted between them; this informed the questions of the subsequent interviews.			
Coding procedure and style	Each interview was transcribed and coded. Analysis took place between each interview. After the fourth interview the transcriptions were re-coded to reduce the coding scheme, thereby making it more focused. The coding style of the analysis was loose in that codes overlapped and were not mutually exclusive. Open coding was done explicitly. Selective and axial coding was developed implicitly through mini-frameworks and through memos, including coding notes and theoretical notes (Strauss & Corbin, 1998, p.141 & 217).			
Tools	Atlas.ti was used to support the analysis.			
Reporting style	The reporting style adopted here aims to be story like to convey the richness of the data. Also, since the interviews were opportunistic and the coding style loose, it makes less sense to report the individual codes and numbers of quotations of each participant. The aim is to convey the understanding that the analyst has developed.			
Validation	There are a number of possible levels of validation when doing a grounded analysis, e.g.: 1) Tested through data collection and analysis; 2) Verified by interviewees; 3) Verified by a wider population; and 4) Triangulated with other methods/studies. This study went to level one and two. In level two a report was sent to all the interviewees. 7 of the 8 interviewees verified their quotes were accurately used; the other was not contactable.			

Table 3. Semi-structured interview topics.

Topic	Description
Background	Background of the person being interviewed. This aims to introduce the interviewee slowly and find out about their experience and perspective.
Work Organisation	This includes how work is organised, the structure of the organisation, whether there are teams, project lifecycle involvement, and what job challenges are faced.
Business: Client Relationships	This includes communicating with clients, both in attracting clients and handing work off to them. How do people communicate effectively and what challenges do they face?
Practitioner skills	What do practitioners do, why are some better than others and how do they get better in their role? This could give an indication about what is important in their work.
Tools and techniques	What methods are used, how are they used, when are they used, what is valued in a good technique?

Table 4. Interviewees' profiles.

Participant	Spread of Experience in years			Currently
	Full Service Agency	Usability Consultancy	In-house	
1	1			In academia.
2	2		1	In academia but freelances.
3			1	In-house practitioner for ecommerce site.
4	1	1		Information architect for full service agency.
5	2+			Manager and practitioner at a full service agency.
6	5+		1	In-house practitioner for ecommerce site.
7	5+			Manager and practitioner at a full service agency.
8		5+		Manager and practitioner at an in-

|			dependent usability consultancy.

4 Analysis

The analysis has been divided into two interdependent segments. Section 4.1 describes spheres of influence that affect usability work and processes; here, we move closer to appreciating the influence of the client on work processes, tools and methods that are used in practice. Section 4.2 describes the complexity of design and business processes; here, we move closer to appreciating the role and integration of a 'usability component' within this context.

4.1 Spheres of influence: The Make-up of the Work Context

Usability research has focused on understanding and developing methods which form part of usability work. However, to understand this in practice we need a better measure of how the working context affects usability work. It was not surprising to find that the practitioners' decisions and behaviours are influenced by the organisation they work in; however, the data also showed a large influence of the clients' wishes. Fig. 2 shows a representation of the influences on the resultant work processes in practice: the bi-directional arrow signifies the mutually dependent relationship of the practitioner and the organisation they work in; the larger box signifies the client's influence on the work they do. There is a bi-directional arrow between the client and the practitioner/organisation as it is the job of the usability practitioner to offer options of work and guide the client's decision.

Fig. 2. Diagram of influence on work processes.
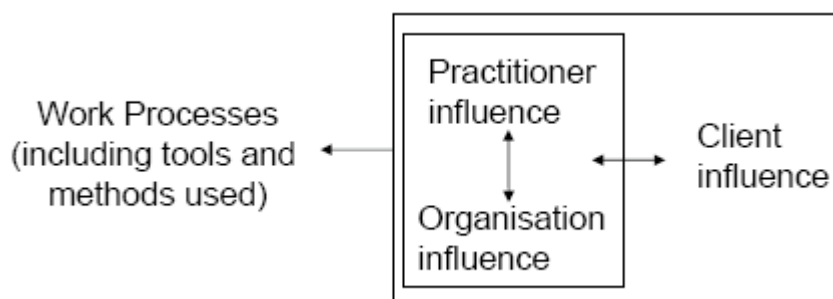
The client's influence is most powerfully shown when there is a tension between what the usability practitioner wishes, in terms of either the work undertaken or the recommendations for the design, and what the client wants to do. This quotation, between interviewer (I) and respondent (R), illustrates some frustration in that an ideal usability path has to be compromised by real business objectives:

The quotations reported here have the following notation: '…' signifies pauses in speech; and '[…]' signifies where text has been omitted or replaced.

"I: It must be interesting from the client side

R: Yeah it's interesting, I work with [co-worker], who has done projects, who will come in with a view that I agree with, that it should be like this... and it's like we can't actually do that, unfortunately, I know that, you know that, but it's just not the way... you do have to have give and take in the experience

I: Can it be frustrating?

R: Yes, very much so... I mean it's a fine balance, it is a fine balance but it's definitely frustrating" (Participant 6)

This situation brings negotiation skills with the client to the fore as both groups try to come to a common understanding about what balance is best for the business and for the user; and it is believed that this balance will increase the potential for market success:

"one of the realities for commercial usability is that products that survive for a long time in a market place have to fulfil both the customers' needs and the business's needs, and somebody coming fresh to a usability project, especially if they haven't dealt with the realities of the market place very much, may make suggestions for ways to change an interface that would purely be in the users interest… from the user's point of view, but might undermine the business case for a product." (Participant 8)

Even though there is interest in using more methods from a practitioner's perspective clients will not pay for something they do not understand to be either valuable or feasible under their constraints. It is part of the role of the client-facing usability practitioner to understand the client's needs and constraints, and work out a unit or units of work that will be most appealing and effective for the clients' particular situation.

"Yeah the biggest thing really …was …the areas that we could sell in, and because it was more of an add on it was kind of difficult to do some ethnographic research or anything like that, which would be great, and we did try and push a couple of times, for that type of methodology but …it was just not feasible for our clients ... It meant that we were limited in the methodologies that we were going to use we just had to focus on two or three key points of the project that we could actually get involved in actually making a difference.

I: So you're looking at where you could have the biggest effect?

R: Exactly, so it's obviously getting involved as early as we possibly could, and try and making a difference before everything's got too far down the road otherwise you put recommendations in that are not achievable within their timescales" (Participant 6)

This negotiation between the client and the practitioner can be conceived as designing a work project, which will depend on the details and constraints of the particular context in question.

"There's not only ideal research conditions there's realities for times, budget …, and sometimes those things play off against themselves and when you design a research project you've got to think of the options, if we do this that lowers the cost, the effect might be a certain lack of robustness in this particular area …, or if you're having trouble getting users of this variety we could use this parallel group of users and change the methodology in such and such a way." (Participant 8)

The spheres of influence illustrate that the work processes that are actually carried out in practice are not the choice of any one person, but are often a negotiation between different groups that have different values and perspectives. The skilled practitioner will be able to perceive how they can be of best use to a client in their terms, so the client can more easily see the potential gain in value and how usability can be easily integrated with their own processes.

The choices that are made at the project negotiation stage will impact on the type of work, the quality of work and the individuals tasked with carrying it out. Organisational culture can either attract or repel good usability practitioners:

"…I love [company A]... they have a really good process in place, they don't undersell projects, what I mean by that is that they don't tell clients we can do this in 3 weeks when it's really gonna take 6. It's very very rare to do too much overtime, I mean you'll have an occasional evening where it's like damn I didn't get enough done today and stay a couple of hours late...

I: And I s'pose it comes to down to [company A's] culture if you like their values and what they're going to do and what they're not

R: Yeah absolutely... because at [company B] it was all about getting the most money for the shortest amount of time… It was really unfortunate it was one of the many reasons I chose to leave cos it was just a ridiculous culture, a ridiculous way of thinking." (Participant 2)

This is an extreme instance of the effect of the organisation on the individual but there is a clear interdependence between the two where the individuals create the organisation and the organisation influences and impacts on the individuals. Different types of organisation will attract different sorts of people. The type of work will influence the frequency

that individuals use different methods and encounter different situations. The different skills and experiences that will be employed on a daily basis will impact on how the individual develops:

"one of the things that I would have liked to have done as well is to work for a pure usability consultancy, because obviously now I've done client side and I've done agency side in a large organization but I think the specialism for working in a pure usability consultancy would have been good as well, to see more different aspects" (Participant 6)

Table 5 includes some trends that were observed in the data between different types of usability practice; it should be noted that these differences are in the degree to which these characteristics apply i.e. all the characteristics apply to the different usability practice contexts to some degree.

Table 5. Differences in usability practice contexts.

| Usability Practice Context	Description
Full Service Agency	More involved in the design side of usability e.g. information architecture. Less onus on documenting evaluations i.e. usability is more integral to planning designs than a stand alone evaluative piece of work.
Usability Consultancy	Deeper specialisation in evaluation, with the opportunity to encounter many different types of interface and a greater opportunity to apply methods. A great bank of usability knowledge and expertise.
In-house Usability Work	There is a greater degree of ownership of the interface and the risks associated with changing aspects of it. Deep understanding of the interface as well as business, political and technical issues associated with it.

4.2 Design and the Business Process

Design and business processes often transcend the expertise and work of any one person and so we need to appreciate how these parts fit together as it will impact on the role and work of usability practitioners. Many people contribute to a design and business process and must be coordinated to work together effectively. There is a recognition that the people in these component parts will have a certain understanding and will want different things:

"it's a very collaborative world, you end up being almost a negotiating power between different groups in a company, if you're doing consultancy then you may be the negotiating power between what you know can be done and the client, and the client's desires, or if you're working internally for a company then you end up negotiating between I guess the designers, the artists, the technology people, the business people who want the product to do a certain thing or look a certain way." (Participant 2)

In appreciating that there are many component parts that make up the design and business process, the successful role and integration of a 'usability component' comes to the fore in usability work: what the usability component does and how it integrates with the rest of the process. The design and business process will vary from company to company but is likely to involve many different parts that link and integrate in different ways, including: graphic designers, interaction designers, developers, middle management, senior management, marketing, accounts, customer service, and project managers. This situation is made more complex when we think about the personalities and relationships at a more individual level as people come together for work. The usability component could fit in with a combination of these parts in practice. Fig. 3 has bundled up this complexity to the relationship between usability work and the wider design and business processes. The three features of this diagram are discussed further below: in section 4.2.1 we discuss the design and business process; in section 4.2.2 we address the usability component; and in section 4.2.3 we discuss the information flow processes that connect the two.

Fig. 3. Usability interfacing with design and business process.
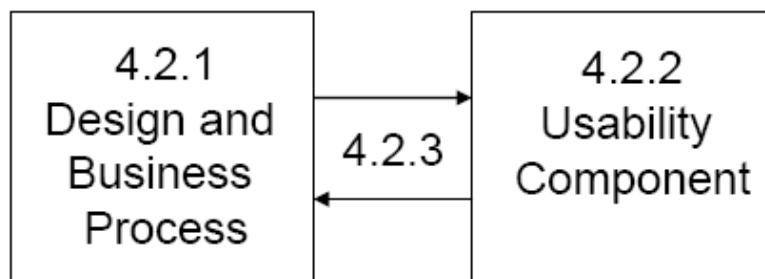
4.2.1 Design and Business Process (left-hand box in Fig. 3)

The influence of the client on establishing what usability work is carried out has been discussed as an important sphere of influence in section 4.1;

this section expands on how clients differ in ways which affects the work undertaken.

Clients are by no means a homogenous group. Participants reported that their clients differ in why they seek usability services. The majority recognized an underlying motive of revenue generation but upon questioning interviewees about why clients seek usability services other reasons were also noted:

- They may believe that usability input will directly increase revenue e.g. ecommerce.
- They may believe usability input can save them money e.g. reduced call centre work.
- They may want to improve communication with people e.g. Government or advertising.
- They may want to make services more accessible e.g. Government.
- They may want to comply with legislation e.g. Disability Discrimination Act.
- They may be interested in the steady evolution of their product lines.
- They may just want to provide a better service.
- They may just have heard of usability and think it is a cool thing.

These reasons are not independent, so a client may have several of these goals. Clients may also not know what they want or what they might be able to achieve with the help of usability input. It is the job of the skilled practitioner to understand the clients' needs and translate them into a project that will suit:

"…well the unspoken assumption behind that question is that all the clients know why they have come to us, and they don't. Sometimes the biggest portion of our job is to work with them to figure that out." (Participant 8)

It would also be wrong to assume that clients in a particular context agree:

"I only had contact with the middle management team for a while, and they loved the work, they absolutely loved the work, presented it back and they were ecstatic, then they arranged for me to meet the director who was going to make the final decision and he hated it, hated the whole lot, he just said it doesn't meet our business objectives at all and I think he might have had a point. Because the remit I was given was to come up with the best user experience proposition and nothing else, if I had been thinking about the business proposition in that project then I might have taken more his point of view." (Participant 5)

This demonstrates that the negotiation stage of a project is vital for a project's success; truly understanding the client's real needs cannot be underestimated as a misunderstanding can lead to failure. Once again the

need to balance between user experience and business interests are demonstrated. The task to understand a client is an important one at the start of any client-consultant relationship, and is easier if the consultant already knows the client:

"... generally work with the same clients over and over... occasionally you get a new client, what you want to do as a new business is work with a client over and over because it's cheaper to do it, you've got a reliable relationship, you know their needs but also you build more links within an organisation rather than starting all over again." (Participant 5)

Also clients are dynamic in that they evolve and educate themselves over time, so the beginning of a client relationship might start with a small piece of work that will lead to more work further on:

"…a client might approach a company because they've got an issue, and because an expert evaluation is a lot cheaper than a redesign or a usability test, they'll often say well look at the site we'll pay for an expert evaluation, and that's a good way of not only meeting their initial requirements but also building the relationship and taking the next step on." (Participant 4)

This not only impacts on the relationship between the company and client, and the personal working relationships between people, but the client will also start to educate themselves about the content and the value of usability, and how it can be used:

"R: There's an education process definitely…, I remember 4 or 5 years ago at [company D] trying to explain just the very basics, why you should do usability testing at all during the process never mind the different techniques or anything…
I: Do you think that's changed now?
R: Yes, but... even quite recently I remember … clients getting confused,.... it's a lot better, it got to a point at [company D] where clients were actually coming in and saying we want testing at this point, this point, this point...." (Participant 6)

This indicates that clients undergo a process of education whereby they may start off slowly introducing themselves to usability practice but then gain more control and confidence in how they can utilise usability research for their own endeavours. In the long term this gradual take-up and appreciation of usability services might not only be within certain consultancies and clients at a micro-level, but an industry movement on a macro-level. In trying to probe for how practitioners measured the quality of their work many were satisfied and confident with the fact that they were receiving recommendations and repeat business: the burden of proof for return of investment is not always at the crux of securing usability work and does not always lie with the practitioner. Observations suggest that this applies differently to successful usability companies that are regularly approached to

do work, rather than being in the position of trying to convince a prospective client that the work is worth while – the relationship changes.

4.2.2 Usability Component (right-hand box in Fig. 3)

There are three recognisable elements of usability work: 1) attracting work; 2) doing work; and 3) communicating work. These three elements are interdependent and will be influenced by the skill and experience of the practitioner, their company, and the clients' circumstances. We have discussed the influence of the context of work above and now move on to the expertise, skills and methods of usability practitioners. Two important techniques emerged and will be focused on here: user testing and Heuristic Evaluation.

Practitioners reported using a variety of different methods but they differed in their use, their name and the contexts in which they were used. These techniques were adapted and combined to achieve the goals of their usability research in an efficient and effective manner. These characteristics contribute to an environment that is focused on cost effective results rather than method worship, an environment that focuses more on the skills of practitioners in coordinating resources to achieve results which leads us away from scientific validity and into what is termed below as commercial and design validity:

"I don't have wide experience of academics teaching this stuff, but the ones that I have seen teach it don't have any experience of industry, don't have any experience of the turn around times that are required, don't have experience of what commercial organisations and government organisations really need when you're developing a website, they still tend to be quite statistically focused, they still tend to be, as you say, be quiet, don't speak to the person don't bias it, it's got to be scientific validity. We don't give a damn about scientific validity, we give a damn about commercial and design validity" (Participant 5)

This difference in culture can almost be viewed as a conflict between the rigour and detail of academic work and the pragmatics of getting work done in a timely, cost effective manner in practice:

"between all the really, really minute research that we do in academia, in fact most practitioners don't give a damn, they're not going to care if Malay don't like pink, if they're dealing with a Malay client then the Malay client will tell them that in 3 seconds, they don't need four months of research to tell them that. It is really interesting but I think having experienced both I think what we do here in academia does influence them to some extent as it does percolate up, it's not like they're in a vacuum they know who Nielsen and Norman are and they know other researchers out there" (Participant 2)

The relationship between academia and practice is complex. The attitudes above reflect that there is a difference in the values and activities of academic research and practice. Further work needs to be done to establish what this relationship is, what the status of knowledge is in both camps and how one informs the other. One clear similarity between academic research and practice is that they are both seeking to find right answers through research; however, research methods, values, constraints, goals and interests can differ.

User testing is a common method used in academia and industry; a comparison between the uses of the method in these different contexts provides a way of probing the nature of its use by juxtaposition. One difference is the way that practitioners can be proactive in eliciting user views about particular aspects of the interface:

"the other thing about the way that we do usability testing in academia is much different than in the corporate world, because you will point blank in the corporate world ask the user "what do you think will fit under this piece of navigation?" and then click on it "is this what you expected to see?" Whereas you probably wouldn't do that in academia because you're leading a user down a path which you probably would avoid in academia, but here you're purposely leading the user down a path… it's just a different... It's more about validating the way that you have organised something …, I'm specifically trying to find my mistakes, or specifically trying to get them to use something that I hope will be used. As opposed to academia where I would not want to influence the user at all and see what they would make out of the product." (Participant 2)

Other samples of the data suggest that these strategies of sitting back or engaging with the participant in the user test depend on what the circumstances and objectives of the test are:

"Sitting back and not saying something sometimes has its place, so if we're looking at a detailed purchase process and the person's got to go through certain steps and fill in certain forms and stuff like that sit back and say nothing; but if we're looking at a wider marketing proposition sitting back and saying nothing isn't going to get you what you need, you've got to engage with people." (Participant 5)

Other differences in the administration of user tests include performing interviews and questionnaires before or after the test to elicit information that might be pertinent to the research goals of that project. Another commonly reported technique which differs in its administration is Heuristic Evaluation. However, the variety of ways in which this method is performed leads us to question what actually qualifies as method use. One example of heuristic use is in an ad hoc manner to add weight behind justifying recommendations:

"Almost in a very ad hoc manner, you came up with your wire frame, people ask you why you did that, maybe you had reason, if you don't then look up the heuristics and try to justify it afterwards" (Participant 1)

The ad hoc use of heuristics for justification purposes appears to add some structure and common ground for the client to relate the issues to, as well as a link with accessible theory:

"going back to heuristics... it's more on the client education, so if you identified an issue we'd probably list a heuristic that it would apply to, so the client would go OK, and maybe it helps with some credibility as far as they are concerned cos they go like 'ah, that's one of the main issues and I can see how that applies'." (Participant 6)

Other people reported using them implicitly as part of their expertise as they had assimilated them through education and practice:

"especially when you do a competitor analysis because you have those heuristics in the back of your head because someone on some masters course pounded them into you, tested you, examined you on them, so yeah you do of course. So you're evaluating other websites which are book stores and in the back of your mind … those are hopefully playing." (Participant 2)

It was also reported that heuristics were adapted to go beyond what were commonly referred to as 'Nielsen's ten heuristics' and were sometimes used in a more rigid manner to perform a competitor analysis to approach clients in the hope of generating work. The more rigid use of heuristics was criticised for being too negative and sometimes detached from the context of use which a cognitive walkthrough would not be. Where heuristics were used in a more implicit manner the method appeared to resemble more of an expert evaluation in its description, whereby the labels are even used interchangeably (terminology issues are expanded in 4.2.3):

"Actually, I think that when I do a heuristic review I do it on much wider stuff, … I know about perception and mental representation and I've also looked at models of mental representation as applied to interface design… so actually when I'm doing an expert review I'm referring to all that kind of applied theoretical knowledge that I've developed over ten years, and I think a lot of that has become extremely implicit in the way that I apply that stuff nowadays as well, I don't actually know that I am applying it even though I am." (Participant 5)

This implicit expertise is developed through years of practice:

"Yeah, seven years of practice, it's like anything else it's not that a new doctor just having graduated from medical school has any necessarily less knowledge or the ability to have as much knowledge as someone who's been working in the field for ten years, and it's just that the doctor working in the field has seen the cold for ten years and can probably diagnose a cold within three seconds of seeing the pa-

tient.... it's just repetition, repetition, repetition and it just builds up." (Participant 2)

Also:

"Once you've been a consultant for two years you may have worked on three or four retail sites, three or four services sites, and if you keep on websites you will encounter the same problems, like what does the contact page look like, so you are repeating, applying the same knowledge to a version of the same sort of thing" (Participant 3)

People's perceptions and thinking change through experience and so emphasis should be placed on this dynamic:

"a lot of your thinking is pre-done, you've automated that thinking in some sense because you've seen these types of patterns before and you can just go yeah I can see that" (Participant 5)

This idea that some thinking has been 'pre-done' because similar patterns have been encountered in the past appears to build up a knowledge bank of cases – where similar problems have been encountered and what interface widgets work well and where. In this particular case it appears that practitioners build up a library of interface widgets through which they can apply analogical reasoning so they can bring insights from one interface style across to another e.g. from the Amazon site to a newspaper site:

"I: Do you feel like there's particular widgets or features that you would expect on certain sites that you would get asked to design... so...
R: yeah... send to a friend and that sort of thing... yeah there are definitely …features that people have picked up along the way that I would say would be an expectation on certain sites
I: Such as..
R: well things like send to a friend facility on certain pages you'd tend to have... that thing like… on Amazon where they say 'people who looked at this looked at that', so... I think there would be an expectation to applying that even to say a newspaper site, where you know people who thought that article was interesting, you might think this article was interesting... yeah... you're not looking for a list of what they are…
I: No... as I've been going through the study it's become more apparent to me that when you're a usability expert you're so familiar with what works and the best practice that's out on the web, then you build up a
R: A library of things... yeah definitely... and they're actually books on that they're not called library they're called patterns." (Participant 7)

These implicit pools of knowledge are sometimes realised in tangible artefacts as companies develop and share resources with their staff either through their ongoing work or through specific efforts to establish a bank of expertise to use as a company resource:

"usability consultancies have a lot of experience at applying this knowledge and they actually have slides that are prepared about information scent and what-

ever … they spend …time gathering all this research that's been done by … researchers and say OK they work for three or four retail sites and they basically apply the same principles to each site" (Participant 3)

The effective use of specialist information is a strong competitive advantage in carrying out projects as it provides a bank of knowledge as a starting position for a more concentrated effort on the next piece of work. This collective pooling of knowledge transcends individual practitioners in some sense and leads to the development of a company's expertise.

4.2.3 Information Flow Processes (the arrows in Fig. 3)

As has been discussed in section 4.2.1 the design and business process resembles a complex system because many different component parts interact, which need to integrate with the usability component (section 4.2.2). This integration depends a lot on the experience and expertise of the skilled practitioner seeing opportunities for input, and negotiating work and recommendations on, and in, the client's terms. This section expands on how the design and business process and usability component integrate, which includes themes that have been alluded to elsewhere.

The use of terminology in usability is not straightforward both in terms of job titles and roles, and in terms of the labels used for methods. Recognising people have their own definitions, some practitioners employ a pragmatic solution:

"personally I don't like definitions of usability at all, I think they're quite self-indulgent academic exercises and everyone that works in this field has their own opinion on what usability is, user experience is, information architecture is… talk to someone you can't nail them down, so actually as a very pragmatic user experience specialist or usability specialist you use the meaning that the person uses themselves, you know just be pragmatic about it." (Participant 5)

This lays the basic foundation for negotiating with clients which appears to be one of the major enterprises of coming to agreement with people with different backgrounds and values:

"I really believe that one of the most important skills in HCI is the sort of negotiating between other people and between what's there and what needs to be there and trying to build that pathway in a way that's, it doesn't have to be aggressive or mean to people you just have to explain like 'look I know that this kind a worked for you guys before but maybe we should try this out, let's put it in front of users, let's see if they like it.' I think that this helps clients a lot. Because they've actually hired you to try and help, but not tell them that they're all wrong all of the time." (Participant 2)

The idea of stopping at the stage of identifying problems for clients seems poor practice, and many practitioners are conscious that how they communicate their findings and results will have an impact on whether the client receives them well in the short term, and whether the client seeks further usability input in the future, both of which have a significant effect on how usability is dealt with in industry:

"we also include positive findings from our study, there are a couple of reasons for that, …we …treat our clients like human beings … people often work months or years on a product and I know how dispiriting it is to have someone to come along and evaluate it and only point out the parts that aren't working well… if they don't have a picture of what is working well the temptation would be to fix a small problem by breaking a large positive, so you can actually make a problem worse by trying to fix tiny little niggly bits at the edge when the core of the product is working extremely well. We always try and give an overall picture of how a product is" (Participant 8)

This appreciation of clients and colleagues as people is a theme that pervades successful negotiation whether that is external or internal:

"I: […] do you use personas at all?
R: I have got some…, I don't stick them out in front of developers as that would be quite condescending I think, people have quite a good sense of the typical [company C] customer in their head around the office and I don't want to be condescending to them." (Participant 3)

Getting people on the side of usability and listening to the issues and recommendations that it raises is undoubtedly important. Therefore the communication of usability work seems to be a critical step; however, this varies by client and circumstance. For example, some practitioners thought that large Word documents were too cumbersome but others saw instances where they would be useful:

"R: Again it can vary from client to client, I've worked on one where it was a presentation, it was a round of usability testing… others where it is more of a forty page document that says this testing took place, this happened, this happened.... it depends on what the client's after. If they want to use it for politics within the company then obviously a report or something like that is much more tangible and is more useful than having a presentation or something like that, but if it's purely to communicate to senior people and what have you, where a report might not be necessary, a presentation or something like...
I: And I s'pose you might mix them up and do both
R: Yeah I mean... a report and then a presentation looking at the main points, because most senior people won't read a big fat report so it's a case of communicating to the people as quickly as possible, the higher people
I: Do you have any thoughts about how effective these different things are?

R: Personally I think a face to face is very important otherwise it can become a bit detached - and certainly things like usability testing, I think that it is always good when the client comes to see some of it…" (Participant 4)

Variations of reporting include presentations, PowerPoint files, Word files, video clips, quotations from users, giving recommendations and positive feedback, and organising the issues in some way, e.g. by priority. Two of the most important concerns appear to be to convey the meaning of the issues to the client and getting them to appreciate the issues. The idea of 'detachment' referred to in the quotation above draws us to a dimension of 'closeness' in terms of communication. Practitioners understand the advantages of close, high-bandwidth, communication as seeing a usability test with your own eyes holds more significance than a document reporting its findings:

"… when you go through a usability process and you suddenly see what it is actually like in the real world for your product to be used, it's such a compelling event that people learn from it." (Participant 8)

The idea of learning is also an important one. If we think about usability work and reporting, not as a discrete interval in a design process, but as part of people's ongoing experience, we realise that it has important side effects: from doing the work practitioners learn about the usability of a product and the clients' reaction to the work; and clients learn more about what usability work is about and how the information provided by this type of research can help them achieve their goals. Both groups can reflect on their experience and adapt their behaviour accordingly. The idea of clients educating themselves was also discussed in 4.2.1. Informing others about usability issues and practices so they can understand and appreciate them themselves appears to pay dividends in people's normal routines. Participant 3 demonstrates this in talking about her colleagues below:

"Yeah... they're actually quite user centred as a group… 90% of the time they come up with something which is good, which is nice. I'm kind of coming to the conclusion that if you give all your developers and graphic designers a certain education in usability they inherently include it in their work" (Participant 3)

5 Discussion

This section discusses insights from the analysis under four subsections: section 5.1 discusses methods and processes; section 5.2 addresses relationships; section 5.3 discusses communication and coordination; and section 5.4 refers to psychology and expertise in practice.

5.1 Methods and Processes

The analysis has shown that usability work is heavily influenced by the clients' needs. This commercial focus puts emphasis on effective and pragmatic choices that will deliver results to agreed time and budget scales. This is reflected in Wixon and Wilson's (1997) move away from science to "the art of the possible under constrained resources" in usability practice; and Cockton's (2004) claim that HCI should be more about delivering value than finding the truth. This is perhaps what one participant meant when distinguishing scientific validity from commercial and design validity.

To achieve this value transfer we have seen that the 'usability component' must be flexible to fit in to projects where it can, to suit time-scales, budgets, and research needs. It is proposed here that an adaptable usability component can be considered a 'plug and play' technology. Here, the skilled practitioner plays a critical role in seeing how methods and processes can be adapted, designing projects that will meet the clients' needs, and fitting the organisational context. The fact that method and process choices will be influenced by organisational issues is discussed further by Grudin and Markus (1997).

Methods are combined and adapted to suit the research goals of the project. Wixon and Wilson (1997) observe that user tests can vary in their degree of formality, but elaborate less on informal solution-focused testing which forms part of what has been observed here. Nørgaard and Hornbæk (2006) elaborate further on the details of think-aloud testing in practice, including the influence of practical realities, different processes, and the use of different probing practices which goes beyond the more formal prescriptions in the literature. More work of this nature is encouraged in different design contexts and in observing different methods. For example, as observed here, Heuristic Evaluation appears to be used in a wide variety of ways e.g. ad hoc justification of decisions, to aid communication with clients, implicitly in evaluation (like an expert review), and as a basis for competitor comparisons; so a more focused study on how this is perceived and used in practice would prove enlightening.

5.2 Relationships

Clients are not a homogenous group. They ought to be addressed according to their particular circumstances. Indeed, we begin to get a more realistic picture of usability in practice when we move away from considering method use by rote, and discrete input into specific design processes, and

move more towards considering the people in the process: that develop expertise, that learn from their ongoing experiences, that have different backgrounds and understanding, that react emotionally to criticism and praise, and that make intelligent decisions to achieve the results they do in a commercial setting.

Dumas (Redish et al., 2002) believes the most important factor in responding to usability recommendations in the long term is the relationship between the usability specialist and developers. Our data has also emphasised the importance of relationships: in knowing the company, people, politics and practices that you are working with. Relationships can start with a small study before moving on to larger investment in usability services as the client becomes more familiar with usability services and more confident in their provider. Practitioners also make efforts to foster working relationships by including positive findings in reports, in not being condescending to colleagues, in having high-bandwidth communication with clients and encouraging them to watch user testing.

In academia we may debate the merits of a value-centred approach for HCI (Cockton, 2004), but in practice it appears a matter of economic survival, and one that is intimately related with the working relationships people and companies have with each other.

5.3 Communication and Coordination

It is paramount that the 'usability component' fits well with different design and business processes. It is the job of the skilled practitioner to provide a suitable interface with non-usability specialists and to design a work package that will suit that particular business need. Like other design processes, designing a suitable project for a client is dependent on their particular situation, which will influence what is done, when, and how the work is reported back. It may be the case that usability input is a more ongoing collaborative effort and so an official reporting back stage is not suitable. How usability results are delivered is an important area of practice which impacts on changes to the design in the short term and the perception of usability in the longer term.

Research on usability reporting was introduced in section 3 of this chapter. In that, the inclusion of positive findings was discussed. Stopping at problem identification was recognised as bad practice, which is supported by the empirical work of Hornbæk and Frøkjær (2005). More novel in this paper was the conveying of the 'bigger picture' that was mentioned in our analysis, so the team can make informed decisions and not make a bigger mistake by trying to fix a smaller problem. It appears that closer high-

bandwidth communication between evaluators and designers has greater potential to avoid this problem. The issue of the 'bigger picture' relates well to Klein's (1998, p. 225) discussion on communicating intent so team members can make more informed decisions. Further research could look at this more closely; for example, developing a protocol based on Weick's (1983, cited in Klein, 1998, p. 228) streamlined version of a commander's intent:

- Here's what I think we face.
- Here's what I think we should do.
- Here's why.
- Here's what we should keep an eye on.
- Now, talk to me.

Entwined with communication is coordination i.e. how information transfers between component parts. For example, group size has already been observed to play a role in communication (e.g. Rosson et al. 1988; and Grudin & Markus, 1997). Where usability practitioners are closer to the designers and developers they have richer high-bandwidth contact which can avoid problems that a detached usability report may run into. How the usability component is organised to integrate with the wider business and design processes will influence the work and reporting mechanisms that are used.

5.4 Psychology and Expertise

Where work appears to be varied and complex the skills of the individual practitioner come to the fore. They adapt methods to provide commercially viable solutions targeted toward the current design setting. The skilled practitioner can perceive, through their experience, what working arrangements might be best for the client and what recommendations are most likely to influence the design in a positive way. Here we move away from questions such as 'what is the best method?' to trying to understand how practitioners work, how they gain understanding and insight into the products and people they work with, and how they add value in the commercial context. Klein's (1998) work moves in a similar direction by valuing the expertise of the practitioner over structured methods which are seen to support novices more. He believes that the development of expertise leads to a change in the perceptual ability of the expert. Future research could look toward the psychology of the usability practitioner: particularly how they perceive design situations. The perception of design situations includes the higher level of how a usability project should be composed,

and the lower granularity of what problems and potentials lie within particular interfaces or technologies. Considering practitioners in more detail might lead to supporting novices and experts differently.

Practitioners develop expertise as they experience more and more in practice. Like experts in other domains they appear to build up a bank of knowledge that is sometimes used implicitly and perceived as patterns: e.g. expert chess players chunk patterns of pieces (Chase and Simon, 1973). This can take the form of being familiar with common usability problems and solutions within a certain domain, and building up a catalogue of interface widgets that form the basis for analogical reasoning between cases (Klein (1998) talks about analogical reasoning at length). This analogical reasoning may influence design recommendations and evaluative judgements about the state of the art and best practice. If this form of reasoning is shown to play a significant role, as we suggest, informal methods for developing these internal patterns or schemas could be developed. Related work includes Hammond et al. (1983) that studied elements of decision making by designers (i.e. their perception of the design process, theories of users and view of human factors); and Piegorsch et al. (2006) who have developed a conceptual framework for ergonomic decision making. Work of this nature will have to be specific about the participants under study (e.g. novice/expert, job role, domain) as their experience will play a significant role in shaping their expertise.

Companies build up tangible expertise through research: developing their personnel and building up their portfolio of work. The organisation of this portfolio can provide a great competitive advantage as it helps constitute a company's domain expertise. Further research could be done to find out the significance of this expertise for novices and experts in a company, and tools could be proposed to manage what Perry et al. (1999) call organisational memory.

6 Conclusion

This exploratory study has sought insight into how usability practitioners work in professional web design. This has been done through a grounded analysis of 8 interviews with practitioners. Insights from this analysis have been discussed under the four subsections above: section 6.1 discussed methods and processes; section 6.2 addressed relationships; section 6.3 discussed communication and coordination; and section 6.4 referred to psychology and expertise in practice. We have argued that there exists an outward movement of research for usability practice, where questions have

from method development to organisational issues in practice (see table 1). This research contributes to the higher levels of usability work in professional web design. These higher levels provide an opportunity to study factors that have a significant influence on usability, as practiced in industry, but are rarely addressed when research is focused at a lower level of abstraction. From this higher level of abstraction we believe that usability practice is best conceptualised from a system level perspective, where the goal is to coordinate resources to add value to the design process. We also believe that research at this level of abstraction will complement research at lower levels of abstraction by sensitising it to issues in practice, in this way the different levels of research work in a synergistic way.

7 Acknowledgements

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