

User research: a knowledge management perspective

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Spring 2008

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Introduction

Being heard within organizations is a key concern for practitioners of user research methods¹, and applying these emerging frameworks to the practice of user research can help organizations and practitioners alike become better understand the impact of user research. This paper specifically focuses on the work practices of consulting organizations and the creation transfer of knowledge generated during engagements.

Recent work in organizational studies on knowledge management has shed light on the differing impacts of tacit and explicit knowledge and the role of varied domain knowledge on innovation. Knowledge management frameworks developed by Hanson and Haas have classified knowledge in organizational settings as tacit or explicit based on definitions developed by Ancori, Bureth and Cohendet², and quantified differing impacts and implications of transferring different types of knowledge in service organizations³, while Hargadon and Fanelli have explored the benefits to service organizations of gaining knowledge in different domains.⁴ Applying these frameworks to user research yields implications for organizations conducting user research with the help of consultants.

Knowledge management frameworks

In “Different knowledge, different benefits,” Hanson and Haas studied the performance of sales teams at a large management consulting firm. They evaluated knowledge management practices by examining the two processes used to transfer knowledge and the quality of knowledge being transferred.

They consider knowledge tacitly transferred if it is passed from person to person, as in face to face meetings, emails and telephone conversations; knowledge that is transferred tacitly is also not written down or codified, and can be alternately understood as conforming to folk models of personal advice. Knowledge is transferred explicitly if it takes the form of written or electronic documentation, most commonly existing when employees write down things they know and make them accessible to others. In contrast to tacit knowledge, explicit knowledge may be accessed without coming into contact with the person who originated the knowledge.

Ancori, et al⁵ explored the relationship between tacit and explicit knowledge in their 2000 paper “The economics of knowledge: the debate about codification and tacit knowledge.” While explicit knowledge – knowledge that is expressed and transmittable –is fairly straightforward, their analytical framework posits two levels of tacit knowledge: “crude knowledge,” which includes basic, factual knowledge, and knowledge about how to use knowledge. For example, a piece of basic tacit knowledge would be the observation that a user did not complete a given task during a usability study. An example of the latter type of tacit knowledge would be the ability to take an observation from a user test, combine it with other data and synthesize it into an insight.

One of the key logical conclusion of their framework is that as a result, all explicit knowledge requires a certain degree of tacit knowledge in order to be useful: a specific observation made during a user study in the hands of a non-user researcher is not very useful, because the non-researcher does not possess

¹ (Arnal & Holguin, 2007)

² (Ancori, Bureth, & Cohendet, 2000)

³ (Haas & Hansen, 2007)

⁴ (Hargadon, Brokering knowledge: linking learning and innovation., 2002)

⁵ (Ancori, Bureth, & Cohendet, 2000)

the tacit knowledge necessary to properly use (in this case interpret) that observation in the proper way. This is a compelling contention because it corresponds well with the interplay between the numerous explicit knowledge artifacts generated by the user research process and the need for trained researchers to make them meaningful.

Haas and Hanson defined the quality of knowledge as its “rigor, soundness and insight.” Theoretically, this is an important concern, as many previous knowledge management studies have failed to control for the impact of differing qualities of knowledge when studying the difference between tacit and explicit knowledge transfer, and neither method has been shown to be inherently higher quality than the other.

The implications of this framework on user research are readily apparent. User research typically generates a large amount of data about user needs and behaviors, as well as insights on the part of the practitioner into an organization’s products and services. In cases where organizations conduct user research through consulting organizations, the differing impacts of explicit and tacit knowledge can also be relevant, as they help client organizations achieve distinct goals. However, the impact of quality was not directly addressed due to difficulties in evaluating the quality of information with the qualitative, subjective and proprietary nature of much of the knowledge in question.

Hanson and Haas approached the issue by conducting over 30 interviews with a range of firm members, including those responsible for the firm’s knowledge management program, about the work practices surrounding the development of sales bids. A survey was also deployed, targeting sales teams leaders

Knowledge transfer processes and quality were evaluated for their impact on three axes: Time saved by using knowledge, which is important for service-oriented businesses; quality of work output, which was defined as the “extent to which the output of a [knowledge] task meets or exceeds the expectations of those who receive or use it”; and signal of competence, or the extent to which the knowledge makes others think you are competent.

This framework for analysis was used to test four hypotheses, three of which were confirmed by the data. The study found that, not surprisingly, knowledge quality was key in the effectiveness of any knowledge management scheme, and that the benefits of person to person knowledge transfer or electronic documentation of knowledge are quickly canceled out if the documents require significant rework or interpretation or the knowledge giver is not motivated to help the team.

However, given quality knowledge, their main finding was that knowledge transferred via electronic documentation (and other physical means) mainly improves the speed of knowledge work without improving quality, while tacit knowledge tended to improve work quality without improving speed. They also found that the use of electronically documented knowledge is not likely to impact the signaling of competence.

Hargadon’s research linking learning⁶ and innovation and his work with Fanelli on the constraining and enabling properties of knowledge in organizations⁷ adds another dimension to the analysis by examining the source of useful, quality information, and presents significant advantages to hiring consulting organizations. If user research practitioners access prior knowledge to inform current client work, it

⁶ (Arnal & Holguin, 2007)

⁷ (Hargadon & Fanelli, Action and possibility: reconciling dual perspectives of knowledge in organizations., 2002)

would suggest that outsourcing some user research practices would allow organizations to access stores of diverse domain knowledge that they otherwise would not be able to, and consequently improve work quality.

In “Brokering knowledge: Linking learning and innovation,” Hargadon defines innovation as the application of old knowledge in new contexts. Hargadon proposes a model of knowledge management for innovation that begins with members of an organization accessing knowledge in different domains, bringing that knowledge into the organization, applying it to the organization’s domain and then building more links between the old and new knowledge by building a community around it. Hargadon finds that this process is typically tacit and collaborative and not done by accessing codified knowledge in electronic databases, echoing Hanson and Haas’ finding that tacit knowledge transfer primarily impacts quality.

In “Action and Possibility: Reconciling Dual Perspectives of Knowledge in Organizations,” Hargadon and Fanelli emphasize the distinction between tacit and codified knowledge, arguing that knowledge codified, such as electronic documentation, actually reduce innovation even as they help workers become more productive. They propose that interacting with interacting with as many domains as possible makes the innovation process easier by providing access to a lot of knowledge before it becomes codified, using consulting firms such as IDEO Design and Design Continuum as examples. Interestingly, this implies that consulting companies require their clients for generating new knowledge and innovation as much as their clients need them.

Methods

Data was collected via semi-structured interviews with six user research practitioners at three consulting firms. At each firm, two practitioners were interviewed, with one informant being a more front line researcher and another being a more senior team member who supervises other practitioners, and can speak more for the practices of the organization as a whole. All of the interviews were conducted face to face in the informant’s workplace; four interviews were conducted individually with two informants interviewed together. Due to time constraints on the research process, theoretical sampling⁸ was not employed.

The firms represented were selected because they all frequently employed field-based user research methods but varied in their research goals. Firm A, the largest by size and the first interviewed, is an innovation consultancy that aims to help clients determine future business directions. In the projects discussed, they developed concepts for clients, but the goal was ultimately to help the client understand what direction to take their business in. Firm B, the smallest in size, has its roots in information architecture and typically develops more specific findings and recommendations regarding specific products or services that its clients are close to launching. Firm C, the final firm interviewed, was similar to Firm A in that both tended to focus on more strategic level goals, but varied in the form and emphasis of its deliverables. Due to constraints of time and resources, client organizations were not studied, though that would potentially be a fruitful avenue for future research.

Semi-structured interviews were chosen to explore a consistent set of topics while allowing users to determine what areas were most pertinent. The informants were asked to explore the following topics: what knowledge is generated during an engagement; the types of knowledge generated that are tacit and explicit; how knowledge is transferred to clients; the amount of contact with a client after the

⁸ (Bowers, 1988)

engagement and the ways in which prior experience informs future engagements. As the interviews progressed, they became more focused on the emerging themes around the codification of knowledge during the process and the relationship between tacit and explicit knowledge.

The interviews were transcribed by third party and patterns of work practices around knowledge transfer were developed by applying a grounded approach to the interview data. In a grounded theory analysis, responses by the informants are organized into “categories,” and special care is taken to adhere to the language used by the informants in order to construct a model of the system from the ground up.⁹ The categories were then organized into processes, which are defined as strategies used by the informants involved; conditions, which is the context in which processes are invoked; and consequences, which are actions resulting from processes that are undertaken.¹⁰

Thus, interviews were coded on a line by line basis, with every line being given a category based on the language used in its contents. The categories were then organized into higher level findings about processes, conditions or consequences.

The engagement process

Despite differences in methodology and in some cases, research aims, the generic engagement process was very similar across the three firms studied. All user research engagements discussed, which ranged in client from a financial services companies to a car company; ranged in final deliverables from experience requirements to personas to specific interface recommendations; and ranged in length from six weeks to six months, followed a general pattern of an initial discovery period, followed by data collection, analysis and then the drafting of final deliverables.

Discovery

In the discovery period, the consulting firms are basically learning from the client: establishing deliverables, timelines and expectations around the project, and also try to determine the overall goal of both the client organization and the specific core client or client team that is engaging them. There is also an effort made to begin identifying any political concerns within the client organization that could influence the outcome of the project, a process that continues through the engagement. This phase can be key to the success of an engagement, as political concerns may make some recommendations or findings untenable, and the presentation of those findings could hurt the credibility of any other findings:

An example we had is we did a brand strategy project and we actually came up with an interesting theory around how to grow a brand in general and the specific implications for their brand that they bought partway into. Like they loved the theory.

The application was like really scared them because it actually closed a lot of doors which is actually the whole point of the strategy, to say no to things. But yeah, they freaked out and they just felt like they couldn't – like no one would believe in the rest of the work if that work was in there. (Informant A1)

Data collection and analysis

Data collection and analysis are fairly straightforward, though the firms employ a range of methods for both processes. In terms of data collection, in the projects discussed the firms all employ various types

⁹ (Bowers, 1988)

¹⁰ (Bowers, 1988)

of interviews with users, sometimes in the user's natural context of use of a product or service and other times attempting to recreate that context in a laboratory setting. Interviews may also be conducted remotely from time to time. More ethnographic field methods such as participant observation are sometimes employed as well. The firms also all typically included members of the client organization in the data collection process, both to gain the client's domain-specific perspective on the data and to improve acceptance of the engagement's findings and recommendations later on in the process.

Methods and frameworks for data analysis were more varied between the three firms. All the firms typically debrief sessions involving clients after research sessions to discuss findings. The use of further methods and frameworks are driven by the demands of the specific project and data. A sampling of other methods and frameworks used include "mind melds," a series of sessions in which researchers and core clients review and discuss data while watching tape. Firm B identifies and documents key themes across interviews by using a special analysis spreadsheet. Firm C has built out conceptual models by arranging interview and metaphor elicitation data across a physical space. Client contact is also typically frequent during this period, with the firms providing regular preliminary findings and updates.

Documentation

Documentation of the analysis process also varies by firm and by project. However, there are general practices specific to each firm. Firm A archives almost all physical and digital artifacts created during the analysis process in "archive binders" and "archive boxes":

Yeah. So we create an actual physical binder of stuff and we also put DVDs of files in there as well and it's definitely the final presentation and the final document if those are different. Any sort of interim documents along the way. Oftentimes a lot of images that were captured of like emerging frameworks or clusters or things like that get printed out and put in there.

We also have archive boxes. [...]And that's where you actually have post-its in there. You'll have the field books usually often go in there. The tapes go in there. Any kind of important magazines that you want to hold on to go in there. Like any other sort of physical stuff that you came up with. Like you might make participant cards where you have like the picture of each participant. There'll be a copy in there. (Informant A1)

Firm B typically identifies themes and documents them in Excel spreadsheets, while Firm C prefers to document only final versions of the analysis.

So, the discovery phase, the business value phase, the user research phase and the design phase. And then a well titled list of documents, probably only the final versions. I don't think you put a lot of working version stuff in there. So, what were the final deliverables within there for each of these stages? And just kind of hand them over. (Informant C1)

Deliverables

The deliverables for engagements also varied widely, with the type of project being a more significant driver than the firm. Common deliverables included consumer and market insights organized as narratives, personas, concept sketches, wireframes of varying fidelity, specific information architecture and user experience recommendations, experience requirements and strategic imperatives. However, the firms also seemed to exhibit subtly different attitudes toward final deliverables.

Firms A and B were highly structured on their deliverables and seemed to emphasize them much more, though it is possible that this is a product of the specific projects being discussed. For Firm A:

And then, interim and final deliverables that are more polished pieces; there are PowerPoint decks, but we also bound some copies so they have something to hang onto. Those are designed pieces with pictures, text, frame works, concept drawings, and then, a video. (Informant A2)

[...]

The final document is definitely going to have the concepts. Like all the concepts will be in there. And then some sort of like overarching narrative to tell about the work. There's a lot of kind of like crafting of argument that goes on with the final document and final presentation. And you're going to have – something very typical is you have like five to seven top insights about people and ideally like in a sentence form and then you have like a paragraph to support them. And then you have a little bit of tape to watch for each one of those. Then you talk about a framework and you talk about strategy and you talk about concepts. (Informant A1)

Firm B was similar in mindset, but allowed clients to access final deliverables via a website, as informant B1 recounted:

Ordinarily, our methods are to pass along a few video highlights of this session, and a report's usually about 20 pages long. The report includes an executive summary, a brief overview of the methodology, the user matrix and the findings and recommendations and also a bit about the successes.

[...]

We have a deliverables page where they can access all the videos, highlight clips and documents that we generate for them. [...] So we have the verbatim session videos. We have highlight videos that are – in a full deliverables session we have highlight videos that are topical and speak to particular issues and are organized that way.

According to informant C1, firm C seemed to focus much more on the process of the engagement and less so on the deliverables, favoring a more tacit transfer of knowledge.

We didn't end up [handing over a final report] with this project. And we often don't. Because the nature of our work style is so collaborative with our clients, with our projects and it's often anticlimactic because it's just we've been working together and then we just kind of stop working.

[...]

Transparency and collaboration has always been a key element in work with our clients. And because we wanted them to be able to learn how to do, what we did and working with us becomes a great for us to kind of teach.

The codification of knowledge

Haas and Hanson draw clear distinctions between the properties of explicit and tacit knowledge. As such, it's worth exploring just how knowledge is generated and codified during the engagement process, to better understand the impact of various processes on knowledge transfer and internalization. As the

consulting companies begin conducting user research, whether in the field or in a laboratory setting, researchers begin generating knowledge about users.

As the knowledge makes its way from the practitioner to the client organization, it typically passes through two main filters: first, only a subset of observations and insights are ever documented by practitioners or discussed in debriefs, as many are irrelevant, speculative or not useful. Later on in the process, only a subset of the information that is documented at some point is actually passed on to clients, as much of the original data is deemed not as relevant or is subsequently found to not fit into the client's goals and objectives. Ancori, et al's model framework for the interaction between tacit and explicit knowledge neatly underscores this process: at the end of the engagement, the client typically has a large amount of raw user research data, such as videos or interview transcripts, but it is the tacit knowledge of the user researcher, who knows how to organize that data into useful patterns and insights, that combines with the explicit knowledge to form something of value.

From tacit to explicit

In the early parts of the knowledge, all knowledge is tacit, especially as Hansen and Haas would define it. Researchers conduct studies and learn things about customers, products and services. At this point, the knowledge is still at an extremely low level of abstraction: a single observation or insight, corresponding to Acori, et al's crude tacit knowledge. For example, finding that a player doesn't understand how to do something at a specific point in a game for a video game study, or that an online financial services user wants to see how well his portfolio is doing.

Pieces of crude knowledge that are deemed salient are typically both shared among the team (and in some cases core clients who are present) tacitly, allowing for the generation of new knowledge, encoded and then archived during debriefing sessions. Each firm debriefed and encoded key observations and insights, whether in the form of sticky notes, affinity diagrams, or more complicated documents, such as a participant profile from firm A:

We'd write up participant profiles and so it's just like kind of a one-sheeter on who each person is and maybe probably between three and five really short like two to three sentence stories about things that are going on in their life, particularly interesting stories about being connected and then just like some little demographics. (Informant A1)

Each of the firms typically documented the outcomes of these sessions and shared the results both tacitly, via a meeting or phone call, and, explicitly with clients in the form of some sort of interim findings document or email. For example, firm B schedules calls with clients to discuss preliminary findings, a practice common to the three firms:

We do card sorts with Mind Canvas, which is a great tool that lets you do it online and brings back visualizations. So we post the visualizations, which are these SWF files that it's actually kind of cool because they're dynamic. And then the client and we can be looking at those together while we're talking about them on the phone.

We always have a weekly call for every project that we do just to check in on stuff, and we'll usually schedule an extra call for something big like the results came back, let's talk about 'em. (Informant B2)

Firm C would sometimes share the accompanying explicit knowledge, encoded into Word, PowerPoint, PDF, or other format, via project management software, though email was more common:

I mean, again with Basecamp they were able to just have it all, piecemeal, piecemeal and downloading, downloading, downloading. (Informant C1)

For the most part, knowledge not explicitly encoded at this stage was not considered important, but in some cases, knowledge was relevant or compelling but not appropriate for a written report. For example, informant A2 related the following anecdote about consulting a pet food company:

I worked on this pet food project and it was a global study and I went to Brazil and, , interviewed a lot of people about their — how they feed their pets. And like, in Brazil, people believe that their dogs are like spiritual lightning rods; their dogs are will protect them from evil forces. And it's like, well, I'm not going to turn around [and send that off].

Also, strictly speaking, much of the data that is not record is recorded electronically, as all three firms routinely record user research studies. As such, in cases where users explicitly state something, for example, that that knowledge is recorded and thus falls under Haas and Hanson's "electronic documentation" definition of explicit knowledge. However, practically speaking, data that is not in some way highlighted is rarely ever accessed, either by the consulting firm or the client organization. While the tape might exist, the attention tends to be focused on portions that highlight a tacit observation or insight that the researcher has made. As informant A1 recounts:

The first cut will be taken by some who is out there. We will all be at the debrief so we may talk a little bit about – like that really stood out to me. [...] We would do a lot of tape watching. So we'll have pre-cued-up tape of a particular like interesting bytes.

Thus, by the end of this process, a body of new knowledge around the customer, product or service being researched has been pared from, developed, documented, and organized from individual observations and insights into higher levels of abstraction such as conceptual models and personas. Generally, most of the knowledge found to be relevant and compelling has been documented passed onto the client both tacitly and explicitly, with some exceptions. They have been shared tacitly within the consulting firm and with the core clients, and shared explicitly with the clients.

Second level of filtering

After initial filtering process, the knowledge generated in the user research process is filtered one more time before being final deliverables and presentations are passed onto the client. As the consulting firms work toward final deliverables, each also began to focus on having deliverables and presentations that closely meet the client's – and in many cases, specifically the core client team's – goals for the project, in addition to further refining the findings and recommendations. This filtering has been happening to a certain extent through the project based on what the team discussed in the discovery period, but increases in intensity as the consulting teams move closer to delivering final deliverables or presentations.

A typical reason would be to focus on areas that the client finds more promising and compelling. As informant C1 recounted, "What they would do though is work with us to shape the presentation of that research so that it could, to make it easier for them to share it within their larger organization."

In other cases, the reasons for doing so is that one of the recommendations is not actionable or practical for the client organization due to domain or organization specific factors that were previously unknown, or even that the client simply does not agree with a finding. Informant A1 recounts one recent case:

We came up with the theory on our own. Wrote up documents, sent it to them. Talked about it on the phone call.

[...]

Some of them really believed in it. Some of them didn't.

[...]

And so they have it somewhere. And there's like a slide about it in the final presentation around an example that they could believe in but like all the full implications of exactly what it means did not make it.

The transfer of explicit knowledge

To recall Haas and Hanson's framework and findings, explicit knowledge, represented in this case by artifacts such as final recommendations documents, PowerPoint decks that are sent, personas that are written up and concept sketches that are delivered. Haas and Hanson found that explicit knowledge such as these improved the speed at which a team can complete a task, basically by allowing them to take a document and use its contents without having to generate the contents themselves.

The findings of this study are consistent with those of Haas and Hanson in that regard, as one of the common goals of the engagements undertaken is to develop insights that can then be propagated and inform decision-making through the client organization. Knowledge artifacts delivered to the client often sped up the process, as client teams reused artifacts generated by the consulting organizations to educate and get buy-in from other stakeholders in their organization who were not involved in the research process. Informant C1 relates:

[These insights were] passed on to them through a series of deliverables, documents showing this kind of work, lots of conversations, discussions, whether it was on the phone, it could be up here, when we would fly out there and present it to a larger group. Just a lot of conversation I guess and then fundamentally like here's PowerPoint decks with all of this in it.

And they would take stuff out of the decks we made and put it in their decks to share in some story that they were telling, to share with the rest of their organization. And that was really affirming to see our influence there.

[...]

And that, a lot of the like the video work and video clips and stuff like that was actually driven by a client's desire to have stuff that they could easily and readily just show to others in the organization to make a point, essentially.

The transfer of explicit knowledge artifacts also saved time by providing clients with expertise and work that would take more time to replicate internally, as client organizations often engage consultants because they do not always have the manpower to perform specialized tasks such as user research in a quick enough fashion, according to informant A2.

It can be a timing thing or it can just be like a resource thing where they're like, "We just don't have the hands, or the training, or the background to tackle the question that we have in mind."

But frequently it's a timing thing where it's like they know what they want, they wish they could do the work themselves, but they just don't have the time.

[...]

And I was involved in a project like that last year where a package goods company with a really big, like, a futurist vision about a particular product. They had a team working on something for nine months and they were like, "We don't have an answer, we don't know." Well, we have to give a report in three months, like, let's call [Firm A].

However, there is evidence to suggest that Haas and Hanson's hypothesis that electronic documents do not improve work quality is not applicable in this case. They define the quality of work output as "extent to which the output of a [knowledge] task meets or exceeds the expectations of those who receive or use it."¹¹ In their study, they argued that:

Beyond this indirect effect, electronic document reuse does not necessarily enhance work quality directly. Clients of consulting firms usually demand creative and customized solutions, but the limited richness of electronic documents means that they are more likely to provide facts and figures than complex, nuanced insights (Daft & Lengel, 1984). Documents are best used to help with the basic parts of a sales proposal, such as providing necessary background information that can otherwise take substantial time to locate and compile. (15)

In the case of the engagements studied, explicit knowledge was never transferred in a vacuum and was always accompanied with tacit knowledge to help convey "complex, nuanced insights." This also conforms to Ancori, et al's analytical framework, which has tacit knowledge complimenting explicit knowledge by allowing tacit knowledge holders to properly interpret and apply the explicit knowledge generated during the user research process. To a large extent in these engagements, the consulting firms were not only brought on to generate specific work products but also help familiarize clients with new methodologies, as noted above, and change thinking. For example,

The payroll processing thing, they hired us to change how the organization went. The CEO made clear that he was more interested in getting this team to think differently about how they approached product delivery than the designs we came up with. And we're seeing more of that. That's not the majority but we're seeing more of that. Maybe not wholesale but people do want us to come in there to help reorient how they think about the problems they're facing. (Informant C1)

As a result, the documentation and artifacts can help to both reinforce tacitly transferred knowledge and improve the quality of future work. For example,

We did some work on – we created basically our big name deliverable was actually a poster. That is hanging on our client's wall and he seriously has most of his conversations around talking about the poster and I know for sure like I have friends at [another consulting firm] that have worked on projects where that poster has come out. Our clients have really bought into that work which is awesome. (Informant A1)

¹¹ See supra 3

As a result, despite the circumstances being somewhat different in that tacit and explicit knowledge were being concurrently developed and transferred, my study replicated Haas and Hanson's finding that explicit knowledge artifacts increase work speed. However, one implication of this is that in cases where explicit and tacit is transferred in conjunction, the explicit can help reinforce work quality in addition to improving work speed.

The transfer of tacit knowledge

As previously noted, knowledge is generated and transferred tacitly throughout consulting engagements via face-to-face conversations, meetings, phone conversations and one-to-one emails, often in conjunction with electronic documentation (written documents, PowerPoint decks). The consulting firms in this study typically placed a high emphasis on documenting important pieces of knowledge and passing them onto clients.

There is very rarely stuff that we discover along the way that we do not hand off. I mean basically from an IP perspective we consider whatever we do is for them. (Informant A1)

As such, tacit knowledge that is transferred is primarily advice on how to interpret findings and results, with a second type consisting of observations that are not appropriate for documentation but nonetheless provide useful insight into the research problem.

The consulting organizations all involved clients in their data collection and analysis, but clients were usually not as familiar with the research methods employed by the firms, making the transfer of skills for interpreting user research data such as a videos and interviews key to the effective transfer of knowledge. Thus, one of the main tasks during meetings and calls is to bring the client's attention to any relevant data they might have missed, and help them interpret the data. As informant B1, relates,

[We] definitely make it a priority to communicate [during testing], whether or not our clients ask for it -- makes it a priority to kind of lean over and be like, "Hey, this is something that's interesting. This guys said..

We let them kind of just see what's going on and let them interpret it as they will. Then we hear them out after the session's over and then kind of give us – give them our take. We give them our take on it once they've had their say. Obviously, we don't like telling them that they're wrong based on what they saw but that there's a lot of room for interpretation given the specificity of the game.

Firms A also heavily emphasized the teaching aspect of its engagements, as in this example:

And a typical mind meld is like a day and a half. And probably like three sessions of watching tape. Watching tape. Teaching our clients how to watch tape during that. So it's a lot of like pausing and rewinding and like talking about what you're seeing.

These examples support the idea tacit knowledge transfer typically follows the "personal advice" model described by Haas and Hanson. This transfer, which shares tacit knowledge built up over prior research projects, strongly supports Haas and Hanson's hypothesis that advice from experienced and motivated advisors improves focal team work quality.

Observations that for various reasons were not appropriate for documentation were the other main class of knowledge that was transferred tacitly. Informant B2 related one such example he came across while working on a video game research engagement:

Some of the most interesting things that we've found in the game study had to do with people's motivation coming from where they're in their lives right now. There's one guy who said in his recruiting screener he played games 30 to 40 hours a week, which is a lot. He – he just turned out to be at a place in his life where he just moved to a new city, had a new job with weird hours, his girlfriend he had broken up with and left back in his old city, and so he was kind of in this point of transition and stress in his life, and the game was filling, not just the time, but also these needs. Therefore, his kind of expectations on what he could get out of the game and how we would think about it -- (Informant B2)

-- Right. He thought about it as a commitment rather than something he would – as a result, he ended up being a little more resilient with the certain shortcomings of the game because he was like, "It's frustrating now, but I'm going to be with this thing for 30, 40 hours." (Informant B1)

Firm B related that anecdote to their clients, but did not think it appropriate to include that in formal deliverables such as highlight videos. Nonetheless, that bit of knowledge was important to shaping the context around the research problem and helped drive their understanding of some of their users' motivations.

[This] sounds like it's a side issue, but actually, it gets you a lot of insight into the environment the user is sitting in with somebody over their shoulder, you know.

Another kind of tacit knowledge that is not intentionally handed off at all is the development of best practices, such as applying the appropriate methodology or better knowing how to interpret field data. This corresponds with Ancori, et al's second type of tacit knowledge. However, the act of participating in the collection and analysis process can help clients gain that type of useful expertise, and the training of client personnel is increasingly a goal in outsourcing user research to consulting organizations.

Consulting, experience, domain knowledge and innovation

In addition to improving the work quality of client organizations, the tacit knowledge developed during engagements also help the user research practitioners involved become more effective. In his examination of consulting firms, which included engineering design consulting firms IDEO and Design Continuum, Hargadon contends that one of the key innovation advantages held by knowledge brokering consulting organizations is their ability to work in different domains. A central characteristic of Hargadon's knowledge brokering organizations are that:

The activities that turn past learnings into the raw materials for future innovations become more central and visible because these organizations experience the diversity of ideas, artifacts, and people in different domains, and are often able to identify valuable new combinations of these resources.

In his model of innovation, new ideas come from applying knowledge from one domain in a novel one. As a result, the consulting firms and innovation organizations, including IDEO and Design Continuum, derive innovation advantages because they have access to knowledge from more distinct domains by

virtue of their various consulting engagements.¹³ Two of the firms, A and C, in this study meet Hargadon's definition of a knowledge brokering organization, with Firm A explicitly describing itself as an innovation consultancy and firm C's strategic orientation means that it is often called upon to help clients develop new ideas.

The practitioners interviewed at firms A and C seem to support Hargadon's interpretation of the innovation process, though the amount of interview data collected on this aspect of the user research process was relatively limited. Hargadon cites numerous examples of knowledge brokers innovating by combining knowledge from disparate domains, beginning with this one in his introduction:

Design Continuum created the Pump™. The Pump™ concept produced a form-fitting shoe by incorporating an inflatable air bladder into the sides of an athletic shoe. This solution first emerged when one of the designers, who had previously designed an inflatable splint, recognized how such splints might prevent injuries by building ankle support into a basketball shoe.

He cites numerous similar examples throughout his paper, including Thomas Edison turning a rapid telegraphing device into a mimeograph pen, his design for a stock ticker being applied to fire alarms, and Design Continuum combining an electric pump and battery from toy squirt gun and using them in the design for an emergency room medical device. In Hargadon's examples, the innovation in question frequently involves expanding the solution space for a product. Hargadon's firms, by working in a wide range of areas, are exposed to more solutions, giving them exposure to wider range of solutions than their counterparts in client organizations. By combining their diverse set of knowledge with the knowledge within a client organization, the two are collectively able to innovate, or create a solution that neither of them were previously aware of.

At firm A, experience with a wide range of projects helps to both expand the design space and communicate abstract design concepts, as in the following example related by informant A2:

Those narrative pieces are really critical for communicating those insights and then the design imperatives [such as "the car should evoke a sense of calm"], like, we will give them those in a text form, as well as some, what we call analogs. We'll say, like, "Here are real life examples happening in the world that are," and we'll specifically choose things outside of their own industry. Like, you know, maybe our design imperative is that the thing should be subtle or that if it has like some special technology that you shouldn't broadcast that on the outside.

And for example, like, Cole Haan shoes have Nike Air inside them, but you wouldn't know it from the outside. So, giving them analogous situations from other industries, it's a way for them to kind of go, "Oh, yeah, we totally could do that."

Firm C leverages lessons it learns from its projects into dynamically changing sets of perspectives that it applies in its work with online experiences:

What I realized on that project is that we could improve the experience outside of the website. [...] I mean, we still do a lot of web work, but we're going into every project with this explicit what we call "multi channel mindset." And even if we're delivering on one channel, we are

making sure that we understand the context and our client understands the context and the ramifications of all of those channels.

Another way to view the specific cases that were brought up in my interviews would be to see experiences as taking the best practices developed over time and prior engagements and combining them with knowledge generated during the user research process or from inside the client organization to produce new solutions for the client.

Conclusions

As discussed in the codifying knowledge section, client organizations have a large amount of control over the form and content of user research that they engage consultants to conduct. A better understanding of the types of tacit and explicit knowledge generated through this process and their differing impacts on work outputs can make client organizations become better consumers of user research. The findings of this study suggest that as predicted by Haas and Hanson and in conjunction with the knowledge framework advanced by Ancori, et al, that:

- 1) The production of explicit deliverables such as personas, PowerPoint decks and concept sketches can increase the speed at which an idea is successfully propagated through a client organization
- 2) These deliverables, when combined with the proper context (tacit knowledge passed on by the consultants), can also reinforce tacit lessons learned during the user research process and help transform thinking
- 3) Another type of tacit knowledge, the ability to conduct future user research, can also be transferred, a process some consultants support proactively

Specifically, the bulk of explicit research findings that are documented, emphasized and presented to clients can largely be driven by the client organization and the core client team in particular's needs. Because data that is documented but not highlighted by user researchers is typically lost, it is of crucial importance that clients properly manage consulting firms' expectations during the process.

Additionally, the findings of this study support Hargadon's research analyzing the role knowledge brokers can play in innovation. The knowledge brokering firms in this study both developed reserves of tacit knowledge about various domains in the form of best practices in the course of conducting user research, and in combining that knowledge with domain specific knowledge from a client organization with regards to a specific problem (possibly generated via the user research process discussed above), can create new, innovative solutions.

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