Using TAPT as an Analytical Method for Understanding Online Experiences

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ABSTRACT
There are various methods for understanding user experiences, but many of these focus on explicit and not implicit aspects. Teasing Apart, Piecing Together (TAPT) is a method that was developed to understand and redesign experiences, crossing web / non-web boundaries [9]. This paper presents a case study of its repurposing towards understanding online experiences more deeply, in this case considering playful location-based uses of the mobile web. The approach is to use TAPT to elicit key words from expert users, before conducting a meta-analysis of the results. This process is referred to as TAMA, Teasing Apart with Meta-Analysis. This paper describes and reflects on the TAMA process, and on the use of focus groups to conduct Teasing Apart.

Categories and Subject Descriptors
H.5.3 [**Information Interfaces and Presentation**]: Group and Organization Interfaces – *evaluation, methodology.*

General Terms
Experimentation, Human Factors.

Keywords
Web-based interactions, online lives, analysis, TAPT, TAMA.

1. INTRODUCTION
This paper describes and reflects on the repurposing of Teasing Apart, Piecing Together (TAPT) for more deeply understanding people's experiences online. TAPT is a method for understanding and redesigning experiences. This paper presents a case study on the combination of the first phase of TAPT, Teasing Apart, with Meta-Analysis: a process called TAMA. In this case, the Teasing Apart phase was conducted with focus groups. TAMA was used to examine people's experiences with playful geosocial services on smartphones.

The author conducted the case study to investigate the applicability of Teasing Apart for research-driven analysis. In the case study, the participant (referred to as the 'organiser') ran two focus groups with expert users of a geosocial network called Gowalla, and a second geographical collaborative system, geocaching.

The organiser asked her subjects to apply TAPT's analytical phase (Teasing Apart) to Gowalla and geocaching, resulting in two collaboratively produced analyses of experiences of using those systems. In conjunction with the author, she then conducted a three-stage meta-analysis of that output:

1. A simple comparison, finding keywords that were identical or related in both focus groups and those that were specific to one or the other.
2. Framing the artefacts in a hypertext space, identifying what appeared to function as links and nodes within the systems.
3. Considering the relevance of existing hypertext theory in the context of the results.

The author later conducted an additional analysis of the results, using current theory about playful experiences.

This paper reflects upon the use of TAMA (Teasing Apart with Meta-Analysis) with focus groups in order to better understand mobile web phenomena. After describing the approach, it comments on: how the method met the organiser's hopes and expectations; properties of using Teasing Apart with focus groups; and the process itself. It also discusses how this approach would work in broader contexts.

2. GEOSOCIAL SERVICES
A full exposition of the study that was run within this case study is beyond the scope of this paper, which concerns the methodology used to investigate the geosocial services. However, this section briefly summarises the motivation for exploring the topic and the results gained.

2.1 Why Geosocial Services
Geosocial services such as Gowalla[1] and geocaching[2] are clearly becoming popular. At the time of the study (October 2010), 7% of the Norwegian population owned an iPhone [2], and many more owned other smart phones [4]. This plethora of location-enabled technology means locational services are becoming mainstream.

However, users of such services can struggle to articulate their motivations for using them, and their experiences with them. Additionally, there has been much discussion of the privacy issues of such systems [3] [6], but less consideration of why "checking in" to places gives people pleasure or is useful to them. The organiser wanted to better understand the area.

[1] http://gowalla.com/

[2] http://www.geocaching.com/

WebSci '11, June 14-17, 2011, Koblenz, Germany.

2.2 Insights into Geosocial Services

The two focus groups resulted in two TAPT analyses: one of Gowalla and one of geocaching. The subsequent meta-analysis yielded insights into how the two analyses compared, and the meaning of those insights in relation to existing theory.

The key finding was confirmation that the two tools, despite many surface differences, share a key underlying concept: a location-based community that is hidden from the eyes of outsiders. The primary difference between the tools is the concept of 'being' versus 'doing': Gowalla users passively 'check in' to locations at which they find themselves, while geocachers choose and pursue goals.

3. MOTIVATION

TAPT has previously been successfully used to help software engineers understand and redesign experiences for new contexts [9]. Teasing Apart, the first phase of TAPT, involves analysing an experience on various levels, and in particular considering 'deeper' aspects of the experience such as social and emotional facets. Initial evidence suggested that the understanding yielded by Teasing Apart might be useful for purposes other than redesign: the author wanted to explore this question.

There already exist various approaches to understanding User Experience (UX), ranging from cultural probes (to elicit attitudes to life and technology [5]), to traditional measures such as questionnaires and interviews, to self-assessment manikins (images of puppets for measuring emotion [11]). Teasing Apart is different from these approaches:

Unlike more open-ended methods such as cultural probes, Teasing Apart lets participants focus on **specific experiences** rather than a general area.

Teasing Apart differs from traditional methods such as interviews and questionnaires (which focus on what people think and say), because it involves helping users express **tacit knowledge** as well as more explicit aspects of experience. Users of Teasing Apart describe more obvious facets at the outset, leaving them free to delve deeper into their experiences as they progress through the process.

Unlike techniques such as self-assessment manikins, Teasing Apart empowers participants to **state key words of their own**, rather than respond to or rate key words specified by us as investigators.

Finally, previous evidence showed that the application of Teasing Apart is **very rapid**, and as such it represents an efficient way to gain insights into participants' experiences.

Based on the above reflections, the author wanted to test whether Teasing Apart could be used not just to facilitate understanding towards redesigning experiences, but to help understanding in an analytical, research-driven context.

4. CASE STUDY METHODOLOGY

Yin [17] describes case studies as empirical enquiries that investigate a phenomenon within its real-life context using multiple sources of evidence: case studies help to answer 'how' and 'why' questions. They have been used in diverse contexts in the past. For example, Hertzum [7] applies them to use of scenarios, Minocha [15] to experiences of social software and John [12] to use of the cognitive walkthrough method. John discusses the relevance of 'how' and 'why' questions in the field of HCI (referring to questions such as "How can a technique be used?" and "Why does a method work in this context?"), although [13] discusses the use of case studies to ask "Which is better?"

This case study was exploratory in nature, and centred upon 'how' questions: the overall aim was to see how Teasing Apart would be used by a professional in her own workplace, in the context of her own tasks. As such, the author took a very hands-off approach.

Specific objectives were to:

- understand how Teasing Apart would be applied
- identify any properties of Teasing Apart that were particularly helpful or unhelpful
- understand how Teasing Apart output could be used in a meta-analysis

The organiser was equipped with information about how to use Teasing Apart and was given assistance in setting up the studies. To avoid unnecessarily influencing proceedings, the author stepped back from decisions about how to use Teasing Apart, and merely provided information about the possibilities.

The author held semi-structured interviews with the organiser at three points: before the study; after the focus groups and before the meta-analysis; and after the study. Questions were open-ended and concerned the organiser's plans and expectations beforehand and her perceptions of the results and the method afterwards. Interviews lasted 10 - 30 minutes, and the questions are shown in Table 1, Table 2 and Table 3.

A semi-structured interview format was chosen as this enabled the researcher to acquire comments on consistent topics (helpful for broadening this work to multiple case studies), but also to follow up on interesting comments that were not anticipated in advance.

The analysis process was as follows: the audio interview was transcribed, and answers were grouped by the question they were prompted by. These were then analysed for patterns. Responses were divided into categories: expectations; properties of Teasing Apart; the focus group process; the meta-analysis.

Table 1. Pre-study questions

Question	Data sought
What drove your decision to investigate location-based services such as Gowalla and geocaching?	Motivation
What made you choose TAPT as a tool?	The choice of Teasing Apart as a tool
Are there any other methods you'd consider choosing for this task? If so, what are they and will you use them as well as TAPT?	
Are you expecting to get results from TAPT that other methods might not get you?	
What do you hope to achieve from this study? What are your goals? Why?	Hopes for the study
What impact do you think this study will have on your work? Do you think it might change your perceptions or understanding of location-based services in some way?	

Table 2. Mid-study questions

Question	Data sought
What were the results from this study?	Initial insights
Have you new insight into the POV of the participants, or into how location-based services work?	
Did the study run as you expected?	Were expectations met
Did people tease apart the experiences in the way you expected?	
We jointly made some decisions about the groups of participants: I provided input about how many might work, and you recruited the participants. Did the groups work as you expected? Would you make different decisions were you to run the study again?	How the study ran

Table 3. Post-study questions

Question	Data sought
What were the results from this study?	Results
Have you new insight into the POV of the participants, or into how location-based services work?	
Were the analyses produced by participants useful to your work? Why?	
What (if any) impact do you think your use of TAPT will have on your ongoing work in this area? Why?	
Did you gain an insight into what Gowalla/Geocaching are to experience on a deeper level? What about insight into *why* they're fascinating or compelling?	Expectations met
Have you any further thoughts about whether you'd run this study differently if repeating it?	The method and its fit in the research process
How would you say using TAPT compared with other processes you've used to understand people's perspectives and experiences? Would you say TAPT revealed things that other processes might not? If so, why do you think TAPT revealed these things?	
Did your use of TAPT sit naturally within the research process? By this, I mean, in the context of conducting a piece of research, did it do what you needed, when you needed it?	

5. TAMA: TEASING APART WITH META-ANALYSIS

The organiser chose to conduct Teasing Apart with focus groups because multiple participants would reduce issues of subjectivity and give broader insights. Aided by the author, she ran sessions with two groups, one composed of five Gowalla users and one of two geocachers (a small number due to a no-show). She selected participants local to the Bergen area who responded to a call on Twitter and self-identified as enthusiastic users of the services.

Each focus group lasted for one hour. The organiser opened by asking subjects to share a few words about their background, their expertise with the service, and why they use it. This let her contextualise results and helped subjects get to know one another. She then asked participants to apply the analytical phase of TAPT, as a group, to the service in question. Table 4 shows the Teasing Apart instructions as given to participants: the table was accompanied with a few notes to clarify certain aspects, an example teasing apart of an experience, and a blank table to fill in.

After the focus groups, the organiser conducted a three-stage meta-analysis of the output, assisted by the author:

1. A simple comparison, finding keywords that were identical or related in both focus groups and those that were specific to one or the other.
2. Framing the artefacts in a hypertext space, identifying what appeared to function as links and nodes within the systems.
3. Considering the relevance of existing hypertext theory in the context of the results.

The author also conducted a separate meta-analysis later, framing the results in the context of theory about playful experiences.

The use of hypertext theory involved systematically looking for patterns in the Teasing Apart analyses that correlated with patterns identified in Bernstein's work [1], and seeking other patterns that were not document by Bernstein.

The author later considered these results in the context of play, and applied Korhonen's Playful Experiences (PLEX) framework [14]. This framework lists 20 categories of playful experience. By examining the categories into which the abstract effects of the two Teasing Apart analyses fell, it was possible to gain insight into the *types* of play involved in the two experiences [10].

Table 4. Teasing Apart description given to focus group participants

<table>
<tr><th colspan="4">Description of teasing apart, step by step</th></tr>
<tr><td rowspan="3">Experience (1)
Brief description of the chosen functionality and the experience of using it.</td><td rowspan="3">Surface elements (2)
These are generally nouns ('line', 'box', 'arrangement of photos') and adjectives ('bold', 'simple', 'complex') relating to the design.</td><td colspan="2">Experienced effects
These focus on the physical, emotional and intellectual effect upon participants, and tend to be abstract nouns ('excitement'), noun/verb pairs ('hunger sated') and perhaps adverbs ('quickly'). There are two types of effect, shown below…</td><td rowspan="3">Distilled experience (6):
Consider your table of information, particularly the aspects which you think are key to the experience, and use it to describe the experience as a sentence. Try to keep your sentence neutral: for example, you might mention 'broadcasting' information rather than 'showing' it, because 'showing' implies a visual broadcast.</td></tr>
<tr><td>Literal (3)
Concrete results such as a loud noise, 'broadcast information'.</td><td>Abstract (4)
Relating to emotional and intellectual effects, such as 'excitement', 'co-experience'. This step is important: dig deep!</td></tr>
<tr><td colspan="2">(Step 5) Review the lists of literal and abstract effects, and identify effects that seem especially important, unique or key to the experience. Underline them.</td></tr>
</table>

6. REFLECTIONS ON FOCUS GROUPS AND META-ANALYSIS

6.1 Hopes and Expectations

The organiser discussed her hopes and expectations before and after the study. As will be seen, these were met.

She had high hopes about Teasing Apart's ability to prompt **subjects** to **express their experiences**. She remarked before the study that she could go through the steps of Teasing Apart herself (and that her prior work had largely been that kind of textual analysis) but that asking users to do it was different. She remarked: "This is the people who actually have experience with it. They're experts in using Gowalla and geocaching but they're not experts in theory." She expressed a hope that by gaining insights directly from users, she could reduce subconscious biases of her own: "Perhaps I have prejudices that I'm not even aware of (because I have some of that theoretical background) that this method will maybe allow to cut straight through them."

The organiser had a goal to gain a **deeper understanding** of Gowalla and geocaching. For example, she remarked of Gowalla: "Yes, it's a system for checking in and telling people you're at such-and-such a place, but I'm hoping this might get beneath that, maybe there's something more fundamental."

The organiser said she was intrigued by the way that the method promised a **technology-neutral description** of experiences, saying: "that's very, very interesting, especially as it's clear that it's the social [not the technological] aspects and experiences that are the important thing."

She also remarked that she liked that Teasing Apart seemed "so manageable", referring to the **rapidity** with which it can be applied.

As will be seen, these hopes and expectations were met. More on each of the areas can be seen in Sections 6.2.1, 6.2.2, 6.2.3 and 6.2.4.

6.2 Properties of Teasing Apart with Focus Groups

6.2.1 Elicitation of experiences

The organiser was very pleased by subjects expressing their experiences. She remarked that user-generated terms were more valuable than practitioner-generated terms: "it was very useful getting key words that users agreed upon and using them as a springboard to find the connections to do more analysis […] A very good result there."

6.2.2 Improved understanding

After the study, the organiser confirmed that she had "definitely" gained understanding into the perspectives of participants, including upon how geocaching worked on a superficial level ("the emphasis they placed on the secretiveness and the playacting, I had no idea, and I thought I had a reasonable idea of what geocaching was"). Her superficial understanding of Gowalla did not change: "I think it's more about what was emphasised. I didn't learn anything new as such, as I know that service better, but definitely the emphasis and the way it was discussed was very useful."

When asked if she felt she now had a deeper understanding insights into what Gowalla and geocaching, she said "Absolutely! I think probably even more than I'd imagined." She said that she felt the meta-analysis of the output of each focus group was where she really gained that understanding, adding "But that's probably because we're able to compare, they only had one to discuss, we're looking at it from above."

The organiser felt she hadn't gained insight into what made the services she was interested in so compelling, although she appeared to feel with hindsight that perhaps the goal was unrealistic.

6.2.3 Experience focused

The organiser was enthused about Teasing Apart's focus on experiences over technology and the resultant technology-neutral descriptions, saying "I loved that it highlights the experience of feelings attached to it because most methods don't."

6.2.4 Efficient

The organiser remarked upon the efficiency of using Teasing Apart in this way, remarking "We actually spent very little time" and adding that the method lends itself to repeated use: "You could do it again, as the number of hours actually is pretty low."

She compared Teasing Apart to textual analysis, the approach she would usually use in this context, remarking that "you'd quite likely get to the same [results using textual analysis] but it'd be a far more round-about route."

6.2.5 Repeatable

The organiser commented that given the lightweight nature of the method, it would be relatively straightforward to run multiple instances of this kind of experiment: "It really would be useful to do this with many different groups, because the end result is very useful […] you could run it with a lot of groups […] You wouldn't have an insurmountable amount of data."

6.2.6 Rich data

The organiser was happy with the richness of the qualitative data which resulted, remarking that subjects "generated a lot of good ideas" and saying "I thought it was a really useful way of generating material about, a rich description of, a technological experience."

6.3 The Process of Teasing Apart with Focus Groups

6.3.1 Selection of subjects

The subjects had responded to a Twitter-based call for participation, and self-identified as enthusiastic users of the services in question. This of course meant that their opinions were subject to a positive bias. We targeted these groups in order to understand their perceptions of the services.

Key message: as with all work involving participants, be aware of factors such as selection bias.

6.3.2 Group discussions and the emergence of meaning

The organiser commented upon a maturing or shift in focus from subjects' first experience descriptions to their closing descriptions, remarking that they teased apart experiences in such a way as to provide plentiful details.

She also noted that using groups provided benefits. She felt that there was "a lot of value" in having groups interact and come to a shared result, explaining that "in both the groups there were certainly things that came out through discussions that the individuals might not have put down at the start."

Key message: Using Teasing Apart helped subjects reach useful conclusions, and asking subjects to work in groups yielded more powerful insights.

6.3.3 Divergent interpretations of instructions

The two focus groups did not work as expected: the groups were given the same written and verbal Teasing Apart instructions, yet they interpreted these differently:

The Gowalla group (5 participants) conducted one collaborative Teasing Apart analysis, discussing their opinions as they worked. The geocaching group (2 participants) conducted two separate Teasing Apart analyses – each writing down concepts separately – and only worked together to build the distilled experience after each had defined the starting experience, elements and effects.

Lesson learned: be very clear when giving instructions to groups, and don't be timid about steering them back on course. Provide appropriate numbers of copies of forms and written instructions. (For example: the geocaching group was given two blank Teasing Apart forms. Had they only had one form, it seems more likely that they would have worked together.)

6.3.4 Divergent group dynamics

Dynamics in the Gowalla group were not as expected. They held an engaged discussion for the first half of the session, but at one point, things seemed to change: it seemed that one subject had been unofficially running the session (writing down ideas as well as prompting discussion), and half of the group began to lapse into silence. (The organiser later observed: "I thought the Gowalla people would be much more vocal [...] that surprised me.")

It is unclear what caused this dynamic. There are various possibilities:

- Disempowered: it is possible that the quieter participants felt that one person was leading and doing all the work, resulting in their withdrawal.
- Physical space: the quiet group was all at one end of the table, away from the vocal part of the group and the unofficial leader.
- Gender issues. The group consisted of two women and three men, but the silence seemed to be specific to the men: it is possible that they felt disconnected and as though the subject matter was somehow 'womanly'. The silence was most noticeable after an exchange in which the two 'halves' of the group disagreed about Gowalla's usefulness for understanding other people's perspectives (the women felt that it was useful in this way, saying they 'leave their mark for others', the men did not). At this point, the unofficial leader decided to put a dotted line beneath the concept (marking it as 'possibly key'). She then asked whether 'self expression' was key: the result was a deafening silence. The men seemed disengaged and uninterested in discussing this, perhaps feeling that the unofficial leader would overrule them whatever[3]. Meanwhile, the author (who was not a subject) and the organiser (who was contributing as a Gowalla user as well as running the focus group) were present but silent, attempting to keep a professional distance. If our speculation that the men felt dominated is correct, it is possible that they felt unsupported by the two (female, distant) researchers.

Lesson learned: when conducting work with a focus group, ensure that roles are balanced: for example, if one person appears to be chairing, ensure writing responsibilities are delegated to another. If the session is lengthy, ask participants to switch roles midway through.

Beware of participants dominating focusing groups: don't be afraid to intervene if they do. Be aware of possible dynamics arising from the presence of a minority.

Give careful consideration to researcher presence in this kind of experiment. Too little and groups can run out of control, but too much can bias results: this is a difficult balance to strike.

6.3.5 The physical space used for the focus group

The setup of the physical space also impacts group dynamics.

The room used had one large table with chairs around it, meaning the author and the organiser shared the table with the participants. With hindsight, it would have been better for participants to share a small table, sitting close to one another and sharing one pool of materials. The subject who led the Gowalla discussion sat at one end of the large table, while the more silent half of the group were at the other, too far away to see what the subject wrote. Additionally, the Teasing Apart form was perhaps a little staid: making it more dynamic or fun would have helped.

Lesson learned: One way to encourage the consensus outcome and encourage the group to freely share materials would be to provide the Teasing Apart form on a large sheet of paper, a whiteboard, or a projector. Additionally, the Teasing Apart form given to participants looked very like Table 4. A colourful and interesting table (such as that shown in Figure 1) may add more joy to the process.

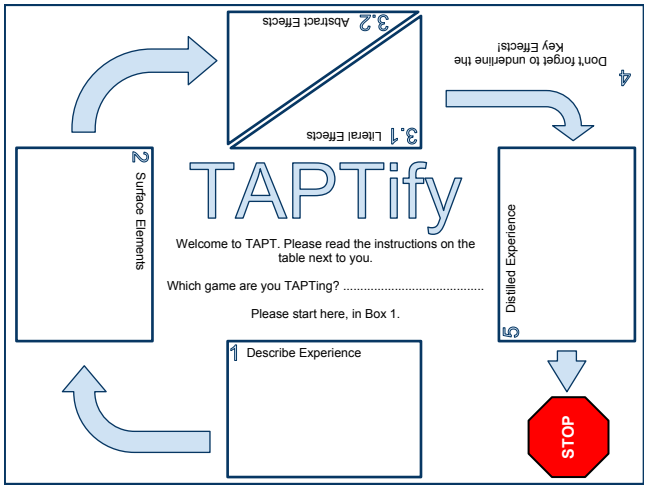

Figure 1. An example of a fun, colourful Teasing Apart form

[3] An example of disagreement. (A is female, B is male):

A: "For me it's definitely expressing myself and what I'm doing."

B: "I don't know if I express that much through Gowalla."

A: "You don't feel you're telling the world something, that you're a leader?"

B: [Joking] "Just that I lead a boring life!"

A: "That's still expressive."

B: "Sure… but I'm not sure how important it is."

6.4 Meta-analysis

In the meta-analysis, the author and the organiser drew on the Teasing Apart output and related it to theory. The organiser remarked upon the importance of "the way [the Teasing Apart analyses] set us onto thinking further in terms of relating things to theory." The process was:

1. A simple comparison of the two Teasing Apart forms
2. Considering that information in the context of hypertext theory (particularly using key words)
3. Relating the output to specific areas of theory (in this case, Bernstein's patterns of hypertext)

The keywords from subjects were a good starting point for the second step, providing a framework and a vocabulary for articulating ideas. Indeed, the organiser felt the key words were especially useful in the meta-analysis, more than the distilled experience description (which is generated by subjects based upon key words). Although she used the key words more, she felt that it was important that subjects produced the distilled description, remarking: "I feel strongly that that's very important but we didn't use that as directly, did we? That's interesting. I'm not sure what that means." Perhaps the process of defining the distilled experience forced the subjects to weigh the relative importance of the different elements and effects.

Although in the second step the organiser focused upon key words, the author later used abstract effects to conduct an analysis of the results using Korhonen's Playful Experiences framework [14]. This demonstrates that different aspects of the Teasing Apart analysis are useful in different contexts: in this instance, the key words were a useful tool for linking the results with hypertext theory, but the abstract effects (concerning emotional and social responses) were appropriate when framing the work in the field of play.

In both sets of analysis, the organiser and the author's use of prior frameworks allowed them to verify their findings and uncover further facets.

7. METHODOLOGICAL COMMENTS

A common concern about case studies is that they provide little basis for generalisation. Although this paper reports results from only one case study, and as such cannot claim that this reported approach will work in broad contexts, it represents very strong evidence that TAMA can be an efficient way to gain insights into user experiences with technologies.

Shneiderman noted that individual case studies can provoke multiple case studies in order to replicate findings with diverse users and problems [16]. This case study was one of a set of four studies examining TAPT: two others looked at its use for understanding and redesign, while the final study concerned using TAPT to understand genres of game [8]. This was the only case study to apply this specific methodology, but the properties we identified in Section 6.2 were found in the other studies and further corroborated by earlier results [9].

One risk in conducting one-to-one interviews is that of confirmation bias, where interviewees give responses that are overly positive. This is caused by a desire to 'please' or 'help' the interviewer, or by the interviewer asking questions in such a way as to encourage a positive response. The author took several steps to mitigate this risk. The first was to ensure when recruiting the organiser that she was unlikely to be intimidated by the interview process. Second was maintaining a professional approach, reinforcing that interviews were to gather professional opinions, not receive positive feedback or praise. Finally, the author asked about negative as well as positive comments, for example asking why the organiser felt she hadn't gained superficial insights into Gowalla as well as why she felt she had gained deeper understandings.

The author played a dual role in this study, acting as the researcher but also working *with* the organiser to conduct the meta-analysis. This involvement was helpful in that the author was able to bring a strong knowledge of Teasing Apart to the table, but is likely to have altered the outcomes and introduced a level of bias into the results. The decision to become involved was made for ethical reasons, as to do otherwise might have jeopardised the organiser's successful completion of her work.

The organiser herself joined in the Gowalla focus group, contributing with some comments on her own experiences with Gowalla as well as being a moderator. Again, this blurring of roles could have impacted the results from the Gowalla focus group. As discussed in Section 6.3.4, achieving an appropriate level of presence as a researcher is difficult.

8. CONCLUSIONS

This paper has presented TAMA, a novel approach to eliciting and analysing user experiences in rich technological contexts. The approach is:

1. Apply Teasing Apart multiple times (in this instance, with focus groups)
2. Conduct a meta-analysis of the output
    a. Compare resultant Teasing Apart analyses
    b. Relate them to theory in the relevant field: either general theory (e.g. high-level hypertext concepts), or specific frameworks (e.g. PLEX) or concepts (e.g. patterns of hypertext)

The author wanted to understand how Teasing Apart could be used in an analytical, research-driven context, to identify properties of Teasing Apart that were helpful or unhelpful, and to understand how Teasing Apart output could be used in a meta-analysis. This study met those goals, which are answered respectively in Sections 5, 6.2 and 6.4.

The case study resulted in the identification of Teasing Apart's properties in this context, which are: experienced focused; elicit experiences from participants; rich data; repeatable; efficient.

Focus groups are not essential to the TAMA process: for example, researchers could instead Tease Apart experiences themselves. This study used focus groups, and insights into this approach concerned: informant selection; the process itself; interpretation of instructions; group dynamics; the set-up of the physical space.

The approach taken to meta-analysis was also discussed.

The organiser reported that TAMA sat well in the research process, doing what she wanted, when she wanted it. She and the author drew on the written output of the experiments when conducting the meta-analysis: the brevity and richness of these resources lend themselves to using Teasing Apart multiple times.

As has been observed, this paper reports upon one case study, although Teasing Apart-specific aspects of it are corroborated by other studies. It represents a concrete example of what can be achieved by the method, and the author urges practitioners to try this approach. Teasing Apart is a flexible tool, and so is meta-analysis.

For example, Teasing Apart can be used with mechanisms other than focus groups. It was used at the University of Southampton in a small study in which Teasing Apart forms and instructions were left in a coffee room for participants to anonymously fill in during their coffee breaks [8].

Just as there is flexibility in how to apply Teasing Apart, there is also flexibility in the meta-analysis phase. A systematic comparison of Teasing Apart analyses is a straightforward step, but how researchers relate results to theory depends upon the field of research and the research questions. As described in Section 5, two types of meta-analysis were conducted in this work, one relating to hypertext theory (systematically searching the Teasing Apart results for patterns matching those in the literature) and one relaying to the Playful Experience framework (applying the abstract effects found with Teasing Apart to that framework). Both analyses yielded useful insights, and from this we can conclude that useful results can be gained by using Teasing Apart analyses in varied ways.

Trying to understand user experiences involves balancing issues of subjectivity, particularly when seeking a deeper understanding of more tacit facets, as here. As the organiser observed in Section 6.2.5, this approach lends itself to running multiple experiments: resultant Teasing Apart data would not be insurmountable. Multiple sets of data would help researchers gain broader insight into results, and reduce the impact of subjectivity, and issues of group dynamics.

Of course, it is for researchers to decide how many times Teasing Apart should be applied to gain meaningful results. If anecdotal evidence is sought, once may be sufficient. If more generalisable results are sought, however, many Teasing Apart analyses may be required in order to cover a broader base of participants.

At the close of this case study, the organiser remarked that she remained very interested in the Teasing Apart approach, remarking upon its possible use within teaching: "[It is] a way of helping students articulate their experiences. It's got very clear categories."

TAMA bolsters the Web Science toolkit: Teasing Apart helps users of systems articulate their experiences online in meaningful, technology-neutral ways. Outputs from this process, used with meta-analysis, enable researchers to gain insight into online lives and issues of accessibility.

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