

TAPT and Contextmapping: Understanding how we Understand Experience

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Abstract

Teasing Apart, Piecing Together (TAPT) and Contextmapping (CM) are cross-disciplinary methods for understanding people's experiences, in order to build better products and services. While TAPT concerns deconstructing and reconstructing experiences, CM is a method for accessing laypeople's tacit knowledge to support design.

This paper describes the methods, which have been used in domains including the humanities, software engineering, and industrial design. It describes a small comparative evaluation that explore the types of insight yielded by each method, and the contexts of use in which each method is suitable. Eight students worked in pairs on two design tasks, producing designs, responding to questionnaires and participating in a group discussion. The design tasks were built to further the research of the second author, who assessed the designs in this context.

Initial results showed that both methods were suitable for use, but that TAPT was better at dealing with emotional and social aspects of experience, and was faster and easier to use: TAPT was arguably better suited to the tasks. This study demonstrates a suitable approach for comparing design methods, and let us identify the more important research questions about the use of TAPT and CM. The designs that our participants produced can be used in a future study to garner more insights, particularly about how informative and inspirational method outputs are. The strongest factors when deciding which method to use appear to be whether there is a desired focus on emotional and social facets, and the time available to apply the method.

¹ This paper reports on research done while both authors worked at the Eindhoven University of Technology.

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Introduction

Various approaches help us understand people's experiences (known as User Experience, or UX), whether to design products and services or to conduct academic research. There is, however, a dearth of work comparing such methods. We examine two methods – Contextmapping (Visser 2005) and Teasing Apart, Piecing Together (Hooper 2011a) – and present an early study investigating key differences between the methods, and the circumstances in which each is appropriate.

Teasing Apart, Piecing Together (TAPT) concerns understanding and redesigning experiences, while Contextmapping (CM) accesses laypeople's tacit knowledge to support design. Both involve capturing design-relevant knowledge from people who will use the product or service being designed: this is then transferred to design teams. They are suitable for comparison as they are cross-disciplinary generative methods that delve into *tacit knowledge*, setting them apart from other methods such as interviews or observations.

TAPT has been used for analysis and redesign, in contexts ranging from designing a wiki-inspired wall-based museum guestbook, to understanding how people experience different genres of game, to understanding how location-based games compare. CM has been used for example to explore the shaving experience (Visser et al., 2005) and to design a language learning toy for autistic children (van Rijn et al, 2007).

After introducing methods for understanding User Experience (UX), we describe and compare CM and TAPT. Their relevance to technical and humanities domains is noted, with examples drawn from computer science, industrial design and the humanities. We discuss: the methods' suitability for dealing with social and emotional aspects of experience; informing and inspiring designers; context of use; and key differences.

Methods for Understanding User Experience

The last decade has seen increased research into User Experience. In contrast to a prior focus on the work context, UX acknowledges the importance of the people's overall experience of products and services (Norman, 2005). UX can be identified in a number of frameworks. For example, Forlizzi (2004) describes three categories of user-product interaction: fluent (automatic), cognitive (product-focused) and expressive (forming a relationship with a product, e.g. customising it). Hassenzahl (2003) notes UX's subjectivity, and describes two attributes: pragmatic and hedonic. Mahlke (2005) considers hedonics and aesthetics alongside affect and emotion, identifying three types of non-instrumental quality, which are 'hedonics', 'aesthetics' and 'pleasure and fun'. Finally, Wright and McCarthy (2003) describe experiences as holistic, situated and constructed, presenting a framework comparing four relational elements of experience (compositional, sensual, emotional, spatial-temporal) and six aspects about how people make sense of experiences (anticipate, connect, interpret, reflect, appropriate, recount).

Unfortunately, capturing UX into one of these rich frameworks is very difficult. Methods may attempt to elicit opinions, experiences or emotions: some are summarised in Table 1.

Methods such as cultural probes, role-play and video-based techniques and repertory grids concern understanding experience, but do not provide constructs for redesigning experiences in new contexts, and often do not include constructs for understanding abstract or emotional facets. When they do (as in Isomursu's work), this is to the exclusion of other factors.

Dix's experience deconstruction (Dix, 2003) aims to address experiential effects and is paired with experience reconstruction for redesign: however, the method is presented as a

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description of its application rather than as a step-by-step process. Like the other methods presented here, it does not include specific constructs aimed at understanding latent facets.

Method	Description
Experience Prototyping (Buchenau, 2000)	Encourage participants to engage in role-play to understand, explore and communicate ideas about experience.
Repertory Grids (Fallman, 2010)	Elicit ‘conceptual structures’ (single dimensions such as warm-cold, work-leisure) and explore them and their inter-relations.
Cultural probes (Gaver, 1999)	Send participants informal, friendly packs with items such as maps, postcards, cameras and booklets. Include very open-ended questions, such as ‘what is your favourite device?’ or ‘what place does art have in your life?’ Elicit attitudes to life, cultural environments and technology.
Self-assessment manikin (Isomursu, 2007)	Pictures of puppets for measuring emotion along three dimensions (pleasure/displeasure, arousal, dominance-submissiveness).
User studies (Kazmer, 2008)	Collect qualitative semi-structured interview data about Internet-based research topics, for example via telephone, email, face-to-face and instant messaging.
Videotaped Activity Scenario (Little, 2009)	Videotape scenarios developed from interviews, use as a prompt to generate detailed group discussion of experiences, beliefs and expectations.

Table 1 Methods for understanding user experience

Contextmapping and TAPT

By contrast, CM and TAPT are generative methods that uncover tacit, latent knowledge (Fig. 1): participants construct and express deeper levels of knowledge about their experiences. TAPT prompts users to express how they feel about their experiences via small, scaffolded steps, while CM elicits knowledge via group discussion and activities. We focused on these two methods because they elicit deeper insights into experience.

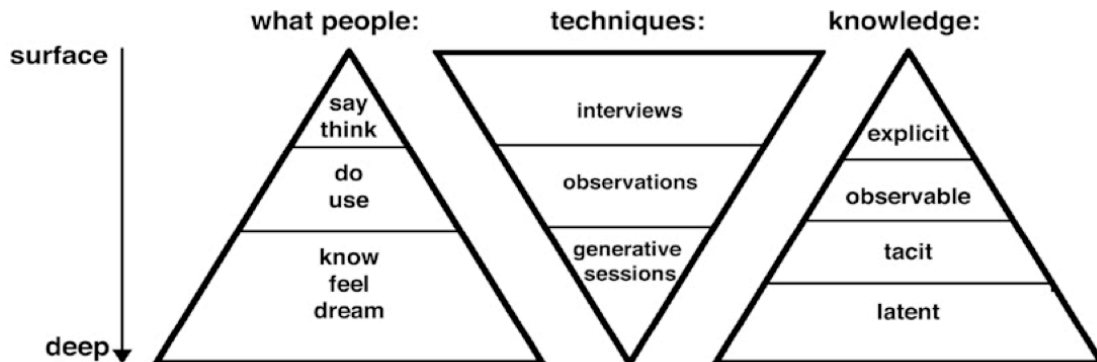


Fig. 1 Different levels of knowledge are accessed by different methods (Visser 2005)

TAPT is a two-phase method that involves deconstructing an experience to better understand it, then rebuilding it in a new context (Fig. 2). TAPT enables the identification of experiential aspects of interactions, and supports the identification of ‘internal’ aspects (which may be emotional, social or intellectual). TAPT was inspired by Dix’s ‘experience deconstruction’ (Dix, 2003) and was developed to support Software Engineers analysing and redesigning experiences.

The two methods have been used in various interdisciplinary contexts. For example, TAPT has been used to explore experiences of location-based play, in a study run in the Department of Linguistic, Literary and Aesthetic Studies at the University of Bergen (Hooper, 2011b); it has also been used by software engineers at IBM to design a spoken social network and a system for navigating in the corporate environment (Hooper, 2011a). CM has been used in industrial design, in both academia and industry (Visser 2005).

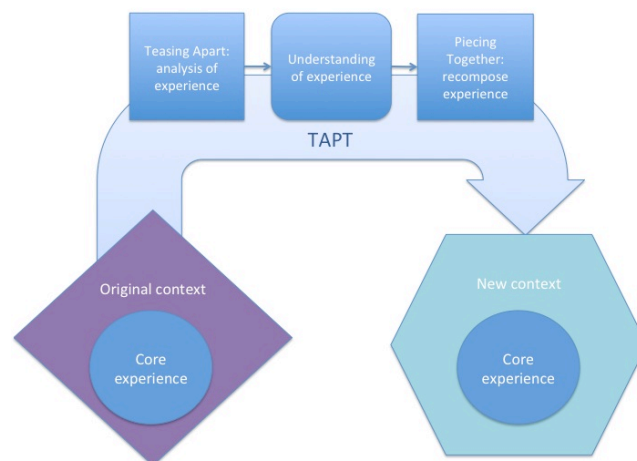


Fig. 2 The TAPT process

TAPT involves:

1. Writing a brief description of the chosen interaction and the experience involved.
2. Listing 'surface elements' of the experience (nouns and adjectives relating to it).
3. Listing 'experienced effects' (physical, social, intellectual and emotional effects).

These fall into two types:

- a. External: visible outcomes such as 'broadcasting visual information' or 'eating food'.
 - b. Internal: for example 'consolidate online identity', 'openness about past experiences', 'anticipation of discussion', 'reminiscence'.
4. Identifying effects that seem especially important, unique or key.
 5. Describing the abstracted experience in a neutral sentence.

(At this point Teasing Apart is done, and Piecing Together begins.)

6. Brainstorming, particularly using key effects, considering the new context of implementation. People might consider modality, technology and scale.
7. Using these ideas, building an example reconstructed scenario.
8. Checking and refining the reconstruction, asking such questions as: are all desired elements included? Were unintended key effects introduced?

CM maps the context of people's interactions with products. The main principle is to let people make designerly artefacts, then tell a story about what they have made: making the artefacts lets people access and express their experiences. Designers and researchers use CM to gain deeper insight into the needs and dreams of prospective users. It involves:

1. Preparation: identifying goals, selecting participants and choosing techniques.
2. Sensitisation: triggering, encouraging and motivating participants to think, reflect, wonder and explore aspects of their personal context in their own time and environment. This is done with sensitising packages, inspired by cultural probes.
3. Sessions: running meetings in which participants do generative exercises. Participants respond to instructions and expressive components to create artefacts that express their thoughts, feelings and ideas. They explain their artefacts, revealing their experiences.
4. Analysis: artefacts contain many stories related to the topic, which are usually recorded. Transcriptions are made, and the context is explored.
5. Communication: bringing results to the design process, where they can inform and inspire the design team. This might involve conventional written reports, workshops, card sets, or persona displays.

As can be seen, TAPT involves a structured, analytical phase followed by creative redesign, while CM involves a more open-ended sensitisation phase, then generative sessions. Evidence suggests TAPT is strong at identifying emotional and social aspects (Hooper 2011), while

CM is good at producing ‘highly informative’ and ‘inspiring’ material for design teams (Visser 2005). We paid particular heed to these areas in our comparison, asking:

- 1) Do TAPT and CM identify emotional and social aspects of an experience?
- 2) Do both methods produce materials that are informative and inspiring?
- 3) To which contexts are the two methods suited?
- 4) What are the key differences between TAPT and CM?

We hypothesised that TAPT would be stronger for identifying emotional and social aspects of experience and that CM would be better at producing informative and inspiring materials.

Method

The above questions were based on evidence in literature about the two methods. We ran small comparative study, in which participants used the methods to build designs, which were subject to later assessment. The goal was to elicit design-relevant knowledge, not usable designs.

We recruited eight participants, five female and three male. Four were Industrial Design students (three masters, one final-year bachelors) and four were PDEng students (conducting a post-masters degree). Their ages ranged from 21 - 31.

Participants worked in pairs to respond to two design tasks, using CM and TAPT. We used a within-subjects design, systematically varying the order in which the two methods were used, to prevent order effects. The tasks were designed to further the research goals of the second author. In the five days prior to the study, the group underwent a ‘sensitisation’ process: each participant was emailed daily with an open-ended question about games (the topic of the workshop).

The design workshop ran over the course of an afternoon. Pairs generated artefacts with the methods. Each participant responded to questionnaires about their experiences with the methods. At the close of the session, the participants took part in a group discussion about their experiences: the study thus yielded design artefacts, questionnaire responses, and group discussion responses. In addition to these materials, the first author interviewed the second author before and after the study, to identify goals and expectations beforehand, and to investigate whether these were met and the impact of each method afterwards. (The second author was unfamiliar with the design methods before the study.) Qualitative results were subject to thematic coding (seeking information relevant to emotional and social aspects, and informative and inspiring materials) and analysis.

The second author had built a technological prototype for enriching physical, multiplayer games (Soute 2009). The two tasks were to design games using that prototype, first outdoors, then indoors: participants all responded to the same task at the same time, and pairs using the same method were not placed together. The first author was present through the session, and this presence combined with providing method-relevant materials kept the participants on track.

Results

We structure this section to mirror the four research questions presented earlier.

Do CM and TAPT identify emotional and social aspects of an experience?

We asked participants how good the method was for helping them understand experiences in general. Participants were positive about TAPT (‘it made more clear the understanding of what you would like to design’; ‘it really helped in analysing the situation’), while CM users were divided (from ‘no, useless’ to ‘this is the method I use to get new ideas’). When asked whether the method helped understanding of emotional and social aspects, only one TAPT user said no (‘emotion is something you can’t really describe’), while other comments were positive. CM users were negative. We asked whether participants felt their designs *supported* emotional and social aspects: at the end of the first task, all TAPT users said yes, as did three of the four CM users. At the end of the second task, all TAPT users said yes, and all CM users said no.

In the group discussion, one participant remarked upon finding CM hard when designing an indoor game: ‘I could not express emotional things, I couldn’t express anything. So for me it

wasn't evocative.' Another remarked that TAPT helped in 'distinguish[ing] the emotional aspects of [experiences] much easier than CM.'

Finally, the second author noted that TAPT-produced game designs seemed to have 'better social aspects', speculating that TAPT prompted participants to closely examine other gaming experiences.

Do both methods produce materials that are informative and inspiring?

Table 2 breaks down participant responses to this question. (There are not eight responses for each method as participants did not always respond.)

	Yes	No
CM	2/4	4/4
TAPT	4/4	2/4

Table 2 Participant perceptions of whether materials are informative and inspiring

As can be seen, participants had mixed feelings about this matter. The second author assessed the eight sets of materials in this respect (Table 3):

	Informative	Inspiring
CM	3/4	1/4
TAPT	3/4	3/4

Table 3 Second author assessment of whether materials are informative and inspiring

As can be seen, the second author had greater confidence in TAPT artefacts than the participants, while her assessment of CM artefacts corresponded to those of the participants.

To which contexts are the two methods suited?

The second author had no experience with TAPT or CM before the experiment. Her primary goal was to gain insight into the types and variety of physical, multiplayer games that might be possible with her technology. She found that participants focused more on the device than expected: because the device was built for outdoor gaming, that influenced indoor designs. She remarked that the TAPT games seemed to have 'better social aspects', speculating that this was because TAPT requires that practitioners 'look closely at other games and the experiences of [those games].'

We asked participants in which contexts they might use each method. Results were inconclusive: participants talked about use of methods when close to or far from the end context (CM users: 2 when far, 2 when close; TAPT users: 3 when close, 4 when far).

What are the key differences between CM and TAPT?

After both tasks, we asked the participants which method they preferred, and which they felt was better suited to the tasks. Seven of the eight reported preferring TAPT in response to both questions, giving reasons such as 'in such a short time it provided easier, more focused idea generation' and 'it was better at stimulating and guiding analysis'

At the close of the session, we asked participants to share the most important points they'd made in the questionnaires. Participants remarked upon TAPT as 'forcing you to think about the analysis more' and CM as 'more open minded' and 'not restricted'. Participants felt that TAPT's restrictions were good because time was short and they needed to work fast.

Discussion

Participants were positive about TAPT and negative about CM when asked about support for social and emotional aspects, suggesting that TAPT is stronger at this aspect. This is unsurprising: TAPT was designed with the aim of supporting such aspects, and CM was not.

We gained mixed responses regarding whether materials were informative and inspiring. Some caution should be taken in interpreting this result, which only implies that the participants were not sure their materials would inform and inspire: this does not mean *design teams* would not find the materials informative and inspirational. We can expect that design teams will interpret materials differently than the people who created those materials. The second author's input (assessing TAPT artefacts as better than CM artefacts) represents a first step, but constitutes only one perspective.

Regarding context of use, we speculate that TAPT is better suited to the outdoor game design task: TAPT seems to guide participants in identifying fun experiences in existing games and subsequently reusing them in new games.

When considering key differences between the methods, we speculate that the short time frame of the exercise may have benefitted TAPT, which is known to be useful when working under time constraints (Hooper 2011a). We also speculate that the tasks were more suited to TAPT: the second author's focus is upon games that incorporate social interaction (which TAPT targets) and fun. In previous design attempts, the second author's experience was that it is hard to design for social interaction: she and fellow designers would design game rules and goals, and social interaction would emerge. The second author noted that in this experiment, TAPT users found it easier to design for social interaction – due to the experiential focus – and to let the goals and rules emerge.

Conclusions

This study provides early evidence suggesting that TAPT is stronger than CM at dealing with emotional and social aspects of experiences (our first hypothesis), although due to the small size of the trial, more data is needed to confirm this. Our second hypothesis was that CM is stronger at producing informative, inspiring materials: evidence thus far is inconclusive. Regarding contexts of use, it seemed that TAPT designs had better social aspects, and that TAPT was perhaps better suited to the tasks (due to its socially-aware nature) and to the outdoor task specifically (because it supports redesigning experiences across contexts). TAPT seemed stronger at helping the pairs work under time constraints. Participants found TAPT more analytical and restrictive, which offered advantages (scaffolding the process) as well as disadvantages (less open-minded).

We emphasise that this study represents a first step: with only eight participants, these results are early and explorative, serving as an indicator of a suitable methodology and a way to signpost the most important research questions. A next step is to conduct a blind expert review, by designers, of the artefacts from this study. We particularly wish to address the second research question, investigating how the designs inform and inspire designers.

The lack of strong participant input about contexts of use – and the successful use by participants of both methods for both tasks – strongly suggests that TAPT and CM are both suitable in a range of design contexts. Thus far, it appears that the strongest differentiating factors are the desired emphasis upon emotional and social facets, and the time available.

TAPT and CM offer different ways to understand individuals' subjective experiences, and have been used in humanities research (for example, studying location-based play). Such studies of individual, subjective experiences yield insights that can complement data gained from techniques that work at the group-level, such as ethnography.

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