IAT 812 – Project Proposals

Audrey Desjardins // January 24th, 2013

Topic #1: Collaborative Avalanche Rescue

Backcountry ski is becoming more popular every year with skiers and snowboarders seeking fresh snow, new lines, and challenging adventures. When traveling outside of ski resort areas (into the backcountry), skiers and snowboarders agree to travel together in small groups and that they become each other's rescue teams if accidents or avalanches happen. In addition to each other's presence, creativity and resourcefulness, backcountry travelers carry probes, shovels and transceivers as tools used in rescue scenarios. Transceivers are used to transmit a signal to other skiers while on the mountain. When a skier is caught in an avalanche, skiers and snowboarders traveling with him need to work as a team, with their own transceivers, to rescue the buried skier. Avalanche awareness and safety classes stress the importance of working as a team to make decisions that do not lead to an avalanche, but also to conduct an efficient rescue and prevent fatal accidents (Adams 2005).

The use of transceivers in backcountry skiing is an example of technology use in a challenging and remote environment with expert users. Previous research has focused on remote or rural environment and the lack of connectedness (for example: Melvin & Bunt 2012; Klafft et al. 2009). However, only few and sporadic research in HCI and interaction design has also investigated the effectiveness of different transceiver devices for avalanche rescue (Michahelles et al. 2003; Brugger et al. 2007).

Research problem:

The social dynamics surrounding backcountry traveling and rescue scenarios can hold critical insights into the design of transceivers (and potentially additional interactive tools). This research aims at investigating the underlying collaborative practice shared by backcountry travelers while safely traveling and in urgent, life threatening situations in the case of an avalanche. This research highlights collaboration that happens in a collocated synchronous space where the challenges arise from remoteness, urgency, risk, and weather. This research also focuses on how users rely on simple technologies to resolve life-threatening situations.

Research method:

I will conduct semi-structured interviews with backcountry skiers, avalanche safety instructors and ski patrollers in the Mount Baker ski area. The interviews will focus on understanding the common strategies they use to travel backcountry, their use of the current technology they carry with them, and the challenges and opportunities they see for the design of new/additional technology. I will also do an historical review of avalanche reports in BC (http://www.avalanche.ca/cac/) and Washington State (http://www.nwac.us/). Both websites hold accident reports for every avalanche that involved skiers, snowboarders or snowmobilers. I will code those reports following different themes that emerge through the data. I will focus on human relationships and technological issues.

Contribution to HCI and interaction design:

The outcome of this project will be a report of current practices of backcountry skiing and accidents that highlight potential areas of work for interaction design and HCI. This case can also serve as an illustration for determining new models for designing for remote and challenging environments.

Disclaimer: This is a new project, quite different from previous work I have done. I am excited to explore this new area, and this class might be the right place to do so for me.

Topic #2: Collaborating with the Exquisite Corpse technique

Quickly and effectively exploring multiple interactions possibilities for interactive interfaces can be challenging, particularly when technological aspect are complex. Traditionally, in design, sketching is a common action for conceptualizing and exploring a variety of ideas (Buxton et al 2012). However, the nature of interaction design provokes challenges in how to sketch actions, movement, gestures, and interactions between an interactive technology and people.

Previous research has tackled how to sketch or prototype for interaction design. For example, Fallman and Moussette (2011) propose to use stop motion animation to sketch out new ideas. This technique allowed designers to change ideas, experiment with new ones, replace sequences, and develop ideas as they were in the process of creating the stop motion animation. Based on this project and other research about sketching and interaction design (Baskinger 2008l Eissen & Steur 2007), we have developed a technique called Exquisite Corpses (Desjardins et al. 2012) based on the French surrealist technique called "Le cadavre exquis" (Breton 1997).

> "Le cadavre exquis *consists of having three people in succession draw the constitutive parts of a figure without the second being able to see the work of the first, or the third the collaboration of the first and second"* (Breton 1997, p.42).

Our technique consists of filming multiple input and output actions with a specific tangible object and to remix them in a random way to create surprising, unique and creative combinations. This was developed in order to allow for fast, quick and dirty explorations of interaction qualities, low-level interactions, and design possibilities. As the authors of this poster, we tried that technique ourselves and saw potential in the richness of the video material, the random association of clips, and the simple process of creating the exquisite corpses. (Technically, we used a laptop with embedded camera to capture the clips and iMovie to assemble the clips)

Research problem:

This technique was not tested with other interaction designers or interaction design students. Seeing how they would use the technique could lead to a better structure and a more helpful tool for the future. In addition, we believe that certain tools to support the collaborative work within the exquisite corpse technique could be developed as well.

What can we learn from observing how designers use the exquisite corpse technique that can inform how to design collocated collaborative interactive tools?

Research method:

I will conduct observation and semi-structured interviews with groups trying the exquisite corpse technique. Observations and question will focus on challenges and opportunities present in this prototyping and sketching technique, the social dynamics within the group while discussing ideas and creating the clips, and the current use of the appropriated tools to create exquisite corpses. I will use open coding of the data to generate codes and potential themes.

Contribution to HCI and interaction design:

The outcome of this project would be to extract guidelines to inform the design of collaborative, collocated and synchronous tools to sketch interactive systems. This work would add to a growing body of work about how to prototype and sketch in interaction design. We would also stress the importance of this method (tool) to support collaborative work within a team of collocated people. This research could also be extended to reflections about how we teach interaction design, what methods are proposed to students.

Disclaimer: This would be a follow up study to a poster I previously presented at CHI. When we wrote the first version, we did this very fast and did not have time to really test this technique as much as we could have. This would be an opportunity to reflect back on this project.

Topic #3: Teaching physical/manual skills over long distance

Our era is challenging the commonly accepted model of production-consumption by empowering various individual producers that create what they personally consume. We are observing this shift in farming, craft and DIY (Do-it-yourself) for a range of projects from woodworking to arduino and digital prototyping. In this era of democratized technology (Tanenbaum et al., forthcoming), we see a growing community of Makers that share finished projects, inspirations, techniques and step-by-step tutorials through online tools.

Past research have shown that online tools with rich media allow for sharing and learning manual skills related to DIY, craft and hobbies (Kuznetsov & Paulos 2010). High-resolution photos, step-by-step instructions, videos, diagrams and forums allow hobbyists and DIY enthusiasts to search and learn more about their craft (Torrey et al. 2007; 2009). Most of these online tools are asynchronous: they are conceived, put together and recorded as a first step, and the audience can then consume these mediated instructions at a later time.

Craftmanship is mastered through practice of subtle, often tacit, movements and control of tools. Traditionally, craft knowledge was learned through apprenticeship, where the apprentice watches and imitates a master while the master corrects and gives feedback to the apprentice until the practice is learned (Gamble 2001). Although online tools can be rich, simultaneous feedback and correction are not possible between a master and a student.

Research problem:

This research investigates the online practices of sharing embodied and tacit knowledge about DIY and crafts. The research focuses on understanding what can be the practice of learning through mediated technologies.

This research asks if there are possibilities for real time (synchronous) teaching of manual skills over long distance. Would it be possible to have an expert in Montreal teaching a novice in Vancouver on how to solder, how to knit, or how to apply a faux-finish paint on a plastic shell for example. Underlying questions are: what are the opportunities and challenges in having real time feedback? What setup is necessary to provide useful information for both the student and teacher?

Research Method:

I will conduct semi-structured interviews with DIY enthusiasts and crafters to understand the current practices of sharing, teaching and learning online. Scenarios of using a synchronous video to teach/learn a skill will be presented to participant and they will be asked to comment on challenges and opportunities they see in this project.

If time allows, I would also like to set up pairs of teachers/student over a skype connection to see how current tools can support teaching/learning through synchronous mediated environments.

Contribution to HCI and interaction design:

This research would combine areas of long-distance mediated communication with DIY and hobbyist culture. The outcome of this research would be a set of guidelines informed by my observations of present practices of sharing online and the shared experiment of teaching/learning a physical skill via skype. This could lead to the development of a tool or service specific for this subculture.

Disclaimer: This project stems from some observations I made in my thesis (which was about practices of everyday designers, including strategies of learning and sharing).

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