

# Emotion Cubes: An exploration into pleasurable experience with interactive technology

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## 1 Introduction

The field of Human Computer Interaction is expanding, now trying to create technologies that are not only more usable, but that are a pleasure to use too. Emotion Cubes is a system that uses a tangible interface to explore some of the issues concerned with developing a pleasurable user experience with interactive technology. In particular it was used to explore how the amount of control users have over their experience affects how much they enjoy it.

## 2 A pleasurable user experience

There are a number of views on the amount of control people should have in order to secure an enjoyable experience. The theory of flow states that optimal experience occurs most frequently when people feel they have control over their actions (Csikszentmihalyi, 1997). Laurel also argues that to have a pleasurable experience with interactive technology, the user must be able to input into the system frequently, have a large range of choices open to them at these times and that these choices should have an impact on the outcome of the interaction (Laurel, 1986); (Laurel, 1991). The more control then they have over their experience, the more enjoyable it will be. However, it is also suggested that we are interested in what is novel, surprising or uncertain in our environment, that these situations raise our arousal (readiness to react) levels and that transitory jumps in arousal can be pleasant (Berlyne, 1960). (Gaver & Beaver, 2003) talk about how ambiguity in a system can enhance user experience. Similarly Inference Machine, a piece of interactive art, deliberately only allowed people to influence rather than control the system so they could derive pleasure from reflecting upon the questions it raised (Sengers & Liesendahl, 2002). This body of research suggests that the unexpected results obtained by reducing the amount of direct control people have over their experience could also lead to greater enjoyment. Emotion Cubes varied the amount of control people had to

see if any of the above findings were supported.

## 3 Emotion Cubes

The 2 emotion cubes are approximately 10cm cubed with embedded tags which allows their orientation to be read. One has 6 different colours on its faces and the other has 6 different textures. When both the cubes are placed on the tag reader, an animation and sound is played on a screen. There were two different conditions. In one condition the combination of upper faces of the cubes controls the animation played, providing the user quite direct and high levels of control. In the other condition, a random colour value is assigned each time the colour cube is replaced and a random texture assigned each time the texture cube is replaced. The animation associated with this combination is then played on the screen. This reduces the amount of control the cubes give over the animations. Participants were assigned either to the higher or lower control condition and asked to play with the emotion cubes thinking about the kind of emotions suggested to them by the animations. They filled in a questionnaire about their experience and discussed their views about it after the session.

## 4 Analysis in Progress

Observation throughout the trial and a brief look at the questionnaire results suggest that people did not find the higher control condition any more or less enjoyable than the lower control condition and did not find the lower control condition more frustrating or, contrary to predictions, more surprising. They also did not rate themselves as having more control over the animations in the higher control condition than the lower control condition. Although there did not seem to be any link between how much control people rated themselves as having in the lower control condition and how much they said they enjoyed the experience, the more

control people felt they had in the higher control condition, the more they said they enjoyed the experience. These findings seem to support the view of Laurel and Csikzentmihalyi that a greater sense of control leads to more enjoyment when direct control is offered. However, they also suggest that when the aim of the experience is not to provide direct control, the relationship between control and enjoyment is not so clearly defined. People generally said they enjoyed using the tangible interface or made no comment about it at all. A more detailed look at the data including the video footage is required.

## 5 Conclusion

Initial observations highlight a number of problems with the described set up to investigate the complex issues involved when creating pleasurable experiences. On further examination of the literature it becomes clear that what constitutes a pleasurable or desirable experience depends largely on the kind of task being carried out, individual differences, and many other factors not considered in the Emotion Cubes design. There is also a possibility that the lower control condition is not sufficiently different from the direct condition or well constructed enough to create higher levels of novelty, surprisingness or ambiguity and that these values are hard for people to rate on a 5 point scale. Equally hard to rate on such a scale was the amount of control people considered themselves as having with the comments they made clearly indicating different criteria were used. A number of useful lessons have been learned from this experiment and a different, more directed approach may be more appropriate to investigate the issues raised further.

## References

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**Biographical Information** Rowanne Fleck graduated with her first degree in Artificial Intelligence and Psychology at the University of Edinburgh in summer 2002. After a short spell working as administrator on a project looking at developing a distance learning course using mobile technology, she came to Sussex to find out more about human computer interaction.

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