A Study in Play, Pleasure and Interaction Design

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Abstract. This paper focuses on the design of pleasurably playful interfaces within an interactive art context. It describes the development of a framework of thirteen pleasures of play and outlines the application of this framework during the design process of three interactive artworks. These processes included both initial conceptual development stages and later user evaluation studies. The paper compares the artist’s view of the pleasures that might be experienced in each work with the actual pleasures experienced by users during evaluation sessions. The results suggest that the pleasure framework is a useful tool to aid in the design of playful interfaces.

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H.5.2: User interfaces, User-centered design

Keywords: Play, Pleasure, User experience

1 Introduction

A stereotypical view of artists characterizes them as creative visionaries, free from the real-world constraints of usability that shape much other design work. While for some artists there is still truth in this view, it is a false description for many of those working in the field of interactive art. This type of art is primarily about creating an experience for its audience, who must adopt an active role in order for this experience to occur. Part of the design process of interactive art, therefore, often involves considering how to motivate an audience so that they will interact and engage with the artwork. This need to provoke active reception has made it more common for interactive artists to take a user-centered approach to the process of designing artworks. In doing so, some artists have borrowed or adapted user evaluation methods from design, HCI and social science research. Thus, although the work of interactive artists and designers are often still quite different in terms of aims and outcomes, in some cases their methods of practice are becoming increasingly similar.

The Creativity and Cognition Studios (CCS) at the University of Technology, Sydney is a research group that has been established to study these changes in the nature of interactive art practice. Its members focus on researching creative collaborations, creativity support and interactive art experience. The research described here stems from the latter area of focus and is part of a larger practice-based study examining strategies for stimulating play behaviors in interactive art audiences. This research is
being conducted by interactive artist Brigid Costello under the supervision of Professor Ernest Edmonds. This paper describes an evaluative user study that was conducted on three different interactive artworks all created by Brigid Costello. This project began with the hypothesis that stimulating playful audience behavior might be a way of achieving a deep level of audience engagement. Interactive artists dread the type of audience participant who spends very little time with their work and who then says, “that they ‘got it’ but that it didn’t ‘do much’.” Many interactive art focuses on producing an experience together with audience participants and “getting it”, in the sense of understanding a message, is not really the point. It is important, however, for audience participants to engage with and explore an artwork in order to experience it fully. Engagement and exploration both occur during playful behavior and this link lead to play being chosen as a research focus here.

The processes of exploration are seen as a precursor to playful behavior. Through exploration the unfamiliar becomes familiar and it is then that play occurs. Studies of playful behavior report an oscillation between these states of exploration and play with the player switching back and forth between the explorative goal “what can this object do” and the playful goal “what can I do with this object” Player boredom is the common trigger for the switch back to exploration with the player then seeking new features or possibilities to play with. The interplay between these two goals has also been seen to occur when an audience participant encounters an interactive artwork. While an interactive art experience will always involve a level of explorative unfamiliarity, it may not necessarily lead to playful familiarity. If it does, however, the oscillation between play and exploration may drive audiences to experience deeper levels of engagement with the work. It was for this reason that this project chose to focus on the stimulation of playful behavior as a key design strategy.

A survey of play theory lead to the development of a framework of thirteen pleasure categories of play. This paper describes the framework and outlines its application in the design of three interactive artworks. The framework was used at several different stages of the design process; during concept development, in mid-stage artist’s reflections and lastly as part of a formal user evaluation study. The study aimed to discover whether the pleasure categories that had been designed into the works were actually experienced by participants. We were also interested in revealing whether the framework could be a useful tool as part of a user evaluation methodology. Lastly, we wanted to see whether the framework as an evaluation tool would illuminate future design strategies for each work.

2 The Pleasures of Play

Play can be used to describe a very wide range of experiences and, in keeping with this, can be defined most broadly as “free movement within a more rigid structure” [13]. This definition is particularly suited to the interactive art context given its

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1 Although Brigid Costello is the primary author of this paper she will, for consistency, use the third person throughout.

2 Indeed for some artists’ purposes playful familiarity may not be at all desirable.
equally broad range of experiential outcomes. It also suits the experiential aims of this research project because it echoes the interrelationship between the participant modes of “what can this object do” (rigid structure) and “what can I do with this object” (free movement). In order to develop design strategies for stimulating play, however, we needed to examine the experience of play in more detail. Play is often associated with pleasurable feelings like joy[11], delight[15] or amusement[4]. Indeed, according to Groos, whenever “an act is performed solely because of the pleasure it affords, there is play” [8]. Like Groos, many other theorists have focused on pleasure in their analyses of play experience. A survey of these different perspectives led us to develop a framework of thirteen categories of play experience that could possibly arouse pleasurable feelings. The aim was to develop a tool that could be used to aid the experiential design of artworks that stimulated play behaviors.

Our framework of the thirteen pleasure categories of play was developed as a synthesis of the ideas of six theorists all of whom approach play and pleasure from different perspectives. Firstly, the framework was inspired by the theories of philosophers Karl Groos and Roger Callois whose ideas arose out of their desire to accurately define a play experience [8, 4]. Secondly, the framework was influenced by the ideas of psychologist Mihaly Csikszentmihalyi who focused on play as a type of pleasurable experience and psychologist Michael Apter who focused on the stimulation of play [6, 1]. Lastly, the framework drew on the ideas of game designers Pierre Garneau and Marc LeBlanc who were interested in delineating types of pleasure in games [7, 9].

Table 1 summarizes the ideas used from each theorist and shows how each relates to the final synthesis of thirteen pleasure categories (rightmost column). Given the very different objectives of each theorist, the table should not be read as equating all these ideas although it does point to some consistencies in theme amongst the six. The various theorists’ ideas were each filtered by the project’s focus on interactive art with some ideas consequently being given less emphasis in the final framework3. It should also be noted that the different categories are each capable of arousing displeasure as much as pleasure. The categories were titled ‘pleasures’, however, because of pleasure’s association with both play and absorption [3]. A participant who experiences displeasure is liable to become distracted and to stop exploring an artwork. The title is representative of the project’s focus on stimulating play and also of our desire to encourage deep engagement with an artwork.

There are four external factors that are considered to act as modifying variables for each of the thirteen pleasure categories. Behavioral psychologist Berlyne, like Apter, focused on the arousal of play. He developed four categories that he describes as discrepancies, which, as the name suggests, arouse play by piquing interest. These four categories are novelty or change, surprise content, complexity and, lastly, uncertainty or conflict [2]. These variables, it is suggested, will have an effect on the strength of the pleasurable feeling that can be evoked by each category in the framework. For example, a work may be trying to arouse pleasure in creation but this

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3 Garneau’s category of advancement and completion, for example, while clearly of great importance in a game, was considered to be not as important within an interactive art experience and was subsumed under the final pleasure of competition.

4 Berlyne’s categories were also developed through the work of Heckenhausen.
pleasure will not be felt very strongly if the things that the participant can create are not perceived to be either novel, or surprising, or complex or unexpected.

Once developed, the robustness of the framework was tested, firstly, by applying it to a selection of thirty existing interactive artworks. The works chosen were analyzed from a description rather than an experience but all were works that were widely known and considered to be successful pieces of playful interactive art. Secondly the framework was applied to the actual experience of three pieces of existing interactive art within an exhibition context. These tests resulted in some refinements being made to the framework particularly to the names used to describe each category. The name of each pleasure category in the final framework was selected to suit the interactive art context and also with a view to being used and understood within user evaluations.

Table 1 Summary of theories that contributed to the pleasure framework development. Concepts outlined in bold span more than one pleasure category.

<table>
<thead>
<tr>
<th>Group</th>
<th>Callois</th>
<th>Csikszentmihalyi</th>
<th>Apter</th>
<th>G relevant</th>
<th>LeBlanc</th>
<th>Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleasure of being a cause</td>
<td>Exploration</td>
<td></td>
<td>Discovery</td>
<td></td>
<td>Discovery</td>
<td>Exploration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Intellectual problem solving</td>
<td>Challenge</td>
<td>Application of Skill</td>
<td>Difficulty</td>
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<td></td>
<td></td>
<td></td>
<td>Competition</td>
<td>Challenge</td>
<td>Competition</td>
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<td></td>
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<td></td>
<td>Chance</td>
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<td>Danger</td>
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<td></td>
<td>Vertigo</td>
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<td></td>
<td>Captivation</td>
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<tr>
<td>Aesthetic sympathy</td>
<td>Simulation</td>
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<td></td>
<td></td>
<td></td>
<td>Sympathy</td>
</tr>
<tr>
<td></td>
<td>Simulation</td>
<td>Creative</td>
<td>Fiction &amp; Narrative</td>
<td>Narrative</td>
<td></td>
<td>Simulation</td>
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<td></td>
<td>Fantasy</td>
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<td>Fantasy</td>
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<tr>
<td></td>
<td></td>
<td>Friendship &amp; Relaxation</td>
<td>Love</td>
<td>Social Interaction</td>
<td>Fellowship</td>
<td>Camaraderie</td>
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<td></td>
<td></td>
<td>Negativism</td>
<td>Cognitive Synergy</td>
<td>Comedy</td>
<td></td>
<td>Subversion</td>
</tr>
</tbody>
</table>

An outline and description of each of the thirteen pleasure categories contained in the final framework appears below:

Creation is the pleasure participants get from having the power to create something while interacting with a work. It is also the pleasure participants get from being able to express themselves creatively. For example, he or she might feel pleasure at being able to shape and manipulate a visual element of a work. This pleasure could come from the aesthetic qualities of the visual creation that he or she makes. It could

equally come from the simple pleasure of feeling in control of the creation of something.

*Exploration* is the pleasure participants get from exploring a situation. Because interactive artworks present participants with unfamiliar situations, all will involve some degree of exploration. However, such exploration might not be pleasurable in some works while in others it may be a key pleasure. For example, a work might have many elements that participants can interact with and they might enjoy exploring each one. Exploration is often linked with the next pleasure, discovery, but not always. Sometimes it is fun to just explore.

*Discovery* is the pleasure participants get from making a discovery or working something out. For example, participants may be unsure about the relationship between their actions and a sound that a work emits and may then feel pleasure when they realize that a specific action can control that sound. The pleasure of discovery can also relate to the aesthetic elements in the work. For example, a particular action may provoke a different sound each time it is performed and participants may get pleasure from discovering a particularly pleasing sound.

*Difficulty* is the pleasure participants get from having to develop a skill or to exercise skill in order to do something. An activity can often be more fun if it is not too easy. For example, hitting a ball against a brick wall can become more pleasurable by reducing the target to the more difficult task of hitting a specific row of three bricks. In an artwork pleasurable difficulty might be experienced, for example, in a work that required participants to co-ordinate a hand gesture with a fast moving object on a screen. Difficulty might also occur at an intellectual level in works that require a certain amount of skill to understand them or an aspect of their content. For example, a work that can be grasped quickly might be less pleasurable than one that is perceived to be more complex.

*Competition* is the pleasure participants get from trying to achieve a defined goal. This could be a goal that is defined by them or it might be one that is defined by the work. Completing the goal could involve working with or against another human participant, a perceived entity within the work, or the system of the work itself. For example, a work might require a participant to compete with a fellow participant so that they can move a visual element to a particular spot and they may get pleasure from trying to achieve this. In a work where participant movement triggers different sounds a participant might also experience the pleasure of competition if he or she chooses to set the goal of trying to trigger as many simultaneous sounds as possible. The pleasure of competition is often experienced in tandem with the previous pleasure, difficulty.

*Danger* is the pleasure of participants feeling scared, in danger, or as if they are taking a risk. This feeling might be as mild as a sense of unease. For example, participants might feel a pleasurable sense of unease about what a work might do in response to their actions. It could also be quite a strong feeling. For example, participants might become very attached to a character represented within a work and feel a pleasurable thrill of danger when they sense that there is a threat to that character.

*Captivation* is the pleasure of participants feeling mesmerized or spellbound by something or of feeling like another entity has control over them. For example, the sound or vision of a work might captivate participants for a while, making them
unconscious of their other surroundings. Captivation could also involve participants enjoying a feeling that a work is controlling or driving their actions.

Sensation is the pleasure participants get from the feeling of any physical action the work evokes, e.g. touch, body movements, hearing, vocalising etc. For example, interacting with the work may require participants to wave their arms about in a way that is pleasurable or it may cause them to touch an object that has an enjoyable texture.

Sympathy is the pleasure of sharing emotional or physical feelings with something. For example, participants might sympathetically feel the movement of a represented dancing creature or they might sympathetically relate to the emotion represented by a crying face.

Simulation is the pleasure of perceiving a copy or representation of something from real life. For example, participants might get pleasure from the way an interaction in a work simulates the rocking to sleep of a baby.

Fantasy is the pleasure of perceiving a fantastical creation of the imagination. For example, participants might get pleasure from the representation of a creature that is made from a blend of human and animal body parts.

Camaraderie is the pleasure of developing a sense of friendship, fellowship or intimacy with someone. This could be with another human participant or with a perceived entity within the work. A work could specifically require or encourage people to interact with each other or it might merely establish an environment that permits social interaction. For example, in a work where movement triggers visual patterns participants may experience the pleasure of camaraderie when they create a visual composition together with another participant. They might also experience the pleasure of camaraderie in a work that allows them to converse or interact with a virtual character.

Subversion is the pleasure of breaking rules or of seeing others break them. It is also the pleasure of subverting or twisting the meaning of something or of seeing someone else do so. For example, a work might require participants to behave in ways that would be frowned upon in real life and they might get pleasure from being so naughty. The content of a work might pleurally subvert a meaning, thing, or relationship from real life. Participants might also feel subversive pleasure simply from behaving in ways that they perceive as being “against the rules” of the world set up by a work.6

It should be reiterated that these thirteen pleasures of play are only possible categories that a participant might feel pleasure in during an interactive art experience. They may not occur at all and it is even possible that a certain category might cause displeasure rather than pleasure. It is also expected that the pleasures would very rarely all occur strongly within a single artwork experience. One trend revealed by the analysis of existing successful artworks was that these artworks elicited strong scores for just two or three of the pleasure categories, with each work involving a different combination. So it is certainly not being suggested that an artwork that stimulates pleasure in all of the categories will be successful nor is it being suggested that the framework has any bearing whatsoever on whether something is ‘good’ or ‘bad’ art.

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6 Although not perceived as such by the audience these behaviors have often been purposely designed in or at least purposely not designed out by an artist.
What is being suggested is that the framework might be a useful design tool to enable artists and other designers to think in a more detailed and focused way about the type of playful experiences that they want their work to elicit.

3 Application of Framework

The final stage of testing the usefulness of the pleasure framework involved its application during the design processes of three different interactive artworks. The first two works were created before the pleasure framework was developed and it, therefore, played a role only in later evaluative reflections. The third work, however, used the framework throughout the whole process of its design. All three works were tested together in a formal user evaluation study that aimed to reveal, amongst other things, which, if any, of the thirteen pleasure categories were experienced in each work.

This section first outlines the methods of the user evaluation. It then describes each of the three works and, for each, outlines first the pleasure model developed by the artist and then the model derived from the user evaluation. The next section goes on to outline the artist’s reflections on these findings.

3.1 Evaluation Methods

Researchers at the Creativity and Cognition Studios (CCS) have conducted many investigations into suitable methods for the evaluation of interactive art and the findings of these studies have influenced the methods chosen here. CCS researchers advocate the use of video-cued recall as a data collection method for interactive art evaluations. Their studies show that video-cued recall is able to successfully capture much of the richness of interactive art experience[5]. Other CCS studies have looked at the use of expert audiences during the prototype stages of interactive art evaluations. Their findings suggest that expert audiences can be particularly valuable at this stage of an artwork’s development because they are often more capable of dealing conceptually with the unfinished nature of the work[12].

In keeping with the CCS approach, this study collected experiential data using video-cued recall followed by a short interview. The study took place in a controlled gallery-like setting and had fifteen participants, eight of whom were classed as expert. Participants were videoed as they experienced the three artworks in a set rotating order. The video of their experience was then replayed to them and they were asked to report on what they had been thinking or feeling during their experience. They were then asked to answer seven set questions. Both the report and the interview were recorded on video.

The study used two new methods that have not previously been documented in CCS publications. The first was to have six of the participants experiencing the artworks in pairs. In previous studies participants had experienced artworks on their own because this allowed us to look in detail at individual patterns of interaction. In our observations of the general public interacting with interactive art, however, we had noticed that paired interactions were quite common. Those who interacted in pairs seemed to help each other to figure out the work both intentionally by sharing their
realizations and unintentionally by providing an interacting body for their partner to observe. Paired interactions also seemed to perform an important role during the experience of playful artworks by making participants feel less self conscious and more able to be socially playful. Having paired interactions, therefore, opened up more possibilities for participants to experience the pleasure of camaraderie. We used paired interactions in this study for these reasons but also because two of the artworks in the study were deliberately designed for multiple users.

The second new method involved surveying each participant about the thirteen pleasure categories. Mid-way through the interview section of an evaluation session each participant was asked to fill out a survey sheet and to identify with a tick any of the thirteen pleasures that they had experienced in each artwork. Participants were instructed to give a single tick for a category they had felt mild pleasure in and a double tick if they felt strong pleasure. They were also told to cross anything that they felt caused them displeasure. We stressed that the survey was not about describing the artwork but about describing their personal experience. If they did not experience any of the categories then participants were told that they shouldn’t tick anything. The category descriptions that appear earlier in this paper were then read out and participants filled in the survey. After they had completed the survey they were asked if there were any comments they wanted to make about the way that they had completed it.

The analysis that this paper describes is based only on the results from the survey and a small section of the data collected during the interview. The survey results were used to develop a model of the key pleasures involved in each work. Next, these models derived from user experience were compared to models developed earlier by the artist. Finally, reflection upon these findings and the related interview data resulted in the identification of future design strategies for each work.

3.2 Elysian Fields

The Elysian Fields interactive was created in 2003 at the very beginning of the research project. It was developed in collaboration with fellow artist Ian Gwilt and used music created by sound artist Dave Burraston. The work presents participants with an animated windswept field of abstract grass that covers an entire wall-sized screen. Moving towards the screen the participant becomes aware that their physical action of walking in the ‘real’ installation space is being translated into the virtual ‘on-screen’ environment, through the animated squashing of tufts of grass and the triggering of sound effects. As the user moves around, the grasses that have previously been squashed slowly grow back in a different shade, triggering a musical tone that blends with the serene music playing in the background. The screen, which is initially full of black blades of grass all moving in unison, becomes increasingly chaotic as the tufts grow back in a different shade and move in a different rhythm. Some of the tufts will trigger an abstract bird animation that rises slowly up from within the grass and flies off the top of the screen.

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7 For a full description of the study (including quantitative results) see the CCS report “Playful Pleasures” at http://www.creativityandcognition.com/content/view/112/124/
This work was consciously designed with a view to achieving three different levels of viewer experience; fascinated observation, non-goal oriented exploration and goal-oriented interaction (triggering the birds). Although we were quite happy with some aspects of the work, particularly the hypnotic qualities of the animation and music, we never felt that this was a finished work. We had discussed taking it further and our ideas usually involved adding another level of goal-oriented interaction. When Costello reflected on this work in terms of the pleasure framework, she decided that its key pleasures should be exploration and captivation but felt that neither of these was strong enough yet. She felt that ten of the thirteen pleasures (all except danger, subversion and difficulty) would be experienced to a very minor extent by participants but that none of them stood out. In effect, she was expressing a view that the work was a bit simplistic. Improving the work, in her opinion, would involve working on increasing opportunities for discovery and competition and these in turn would increase participant’s pleasure in exploration and captivation.

The user evaluation revealed that the five pleasures that participants experienced most frequently during *Elysian Fields* were in order; exploration, sensation, captivation, creation (equal third) and simulation. The two surprises here were the high positions given to sensation and creation. The second position of sensation was particularly surprising because it was also the highest out of all of the works.

The sensation of the footstep interaction in this work was frequently noted by participants in their interviews and reports. They particularly commented favorably on the sound effect that accompanied their step. Many of them correctly recognized that this was the sound of a footstep in snow and for some this gave the piece added resonance, as it reminded them of their childhood. Others commented that the combination of sound and action made them physically feel as if they were stepping on something with more crunch than carpet. This sense of having a physical effect may be what also gave participants such a strong pleasure from creation. While Costello had expected the work to evoke some pleasure from creation she hadn’t expected participants to get as much pleasure from this as from captivation.
3.3 Sprung!

The Sprung™ interactive was created in 2004 while Costello was a visiting researcher at the Nishimoto Laboratory in the Japan Advanced Institute of Science and Technology. The work was produced in collaboration with animator and sound designer Alastair Macinnes. Sprung is partly a toy and partly a musical instrument. A large screen presents participants with a cartoon style urban wasteland depicting three large coil springs standing amongst puddles of water. The interface uses the physical weight of participants standing on three pressure sensitive floor pads to animate three coil springs. Bouncing on the pads causes the springs to depress and release creating animated soap bubbles. There are four different types of bubbles that can be produced on each spring depending on how long the spring spends depressed. The bubbles produced bounce up from the springs before floating down to land in one of five pools of water. As the bubbles land they create a ripple on the pool’s surface and pop producing a musical tone that is based on a Japanese pentatonic scale.

This work was inspired in part by the experience of watching people interact with Elysian Fields. Costello had noticed during participant’s interactions with that work that the grass squashing representation combined with the crunching sound effect made participant’s move their bodies as if they were actually using force to stomp something. Intrigued by the power this representation had over participant’s physical behavior she decided to use the same screen and floor pad interface but with a different representation.

![Two views of the Sprung! interface](image)

While Costello was again quite happy with the atmosphere created by the work, she also again felt that it needed another level of interaction. She felt, that the work didn’t allow people enough control to really work as a musical instrument. She had observed that the visual signs that had been created to indicate the time changes between bubbles were too subtle, with many people failing to notice them. This contributed to the lack of creative control in the work. She was disappointed that the experience of creating a bubble was not as fun as she had wanted it to be. When she reflected

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8 Although the correct title of Sprung! includes an exclamation mark it will not be used in the text of the paper to make reading easier.
on this work in terms of the pleasure framework she decided that its key pleasures were creation and fantasy. She thought that there were seven other minor pleasures that might be experienced in this work but felt that danger, captivation, sympathy and subversion would not be present. Improving the work would, she decided, require strengthening the pleasure that participants could get from creation.

In the pleasure model developed from the user evaluations, Sprung was characterized as evoking the following top five pleasures; exploration, discovery, creation, sensation and camaraderie. The high position given to camaraderie was interesting because it confirmed a tendency noted during the evaluation sessions for pairs to engage more with each other as they tried to work Sprung out. In their comments some participants said that they particularly enjoyed experiencing this work with their partner. The pleasure of fantasy, which Costello had expected to be a key pleasure, was not experienced very often and came in ninth overall. Creation was, as expected, much lower than it should be, particularly when compared to the other two works. This confirmed the artist’s feeling that this work does not allow participants to get strong enough pleasure from creation.

3.4 Just a bit of Spin

The conceptual development for Just a bit of Spin (Spin for short) began in 2006 after the pleasure framework had been developed. Costello had noticed in her analysis of existing artworks that many of her favorite artworks used the pleasure of subversion and so she decided to create a work that had that as a key pleasure. At the time of the user evaluations Spin was at working prototype stage.

Fig. 3. Two views of the Spin prototype

The Spin interactive is a re-working of a pre-cinematic animation device known as a phenakistoscope. Spin consisted of a thin black disk of approximately 40cms diameter that had a series of slits around its outside edge. The back face of the disc had a colorful printed circle on it, depicting figures and objects that would appear to be animated if viewed through the slits as the wheel was spun. The content of the work was based on the theme of political spin and specifically on the type of rhetoric that occurs when politicians speak about progress. When the wheel was spun to the right a series of phrases all containing the word forwards were heard. When the wheel was
spun to the left a series of phrases all containing the word backwards were heard. The speed of the wheel controlled the speed of the sound files. If participants spun the wheel first in one direction and then in the other, they could create new sentences, mixing up the rhetoric of progress.

Although the form of the work changed a lot during its initial development process, the pleasures that were chosen as key pleasures during the conceptual stage were, Costello felt, still present in this prototype. Those key pleasures were subversion, exploration and discovery. She also felt that the work would have as secondary pleasures creation, sensation and difficulty. The other pleasures would all be present in a minor way apart from danger and sympathy, which she felt would not be a feature in this work.

The user evaluations revealed that the top five pleasures of Spin were almost all as expected. These pleasures were subversion, followed by creation, exploration and sensation (all three equal second) and, finally, discovery. Out of the three works Spin received, as expected, by far the highest ranking for subversion. The position of discovery in the user model, however, was a bit low, given that it was supposed to be a key pleasure. This result is echoed by some of the participant’s comments. Two participants, for example, commented that they found the work too “finite” to be playful. While some especially liked this work because they “understood it”, others didn’t like it because they “got it too much”. Perhaps these finite comments might mean that Spin failed to make people play because there was not enough freedom of movement within its structure. As noted above, there was also a sense with Spin that it could be easily understood. Feeling that they had “understood it all” was often a trigger for participants to move on to the next work. These participants, therefore, explored Spin but did not make the shift into playfulness. The other two works, in contrast, were much more technologically and conceptually mysterious and most participants finished their experience without feeling completely sure that they had understood them. (Table 2)

4 Post-Evaluation Reflections

The study did confirm many of the artist’s expectations about the possible pleasures in these works. It was interesting, however, that the work whose results most matched expectations was Spin, for this was the only work that had been designed with the pleasure framework in mind. This indicates that the framework was an effective tool for the conceptual development of an experience.
The ways that the pleasures in some of the other works diverged from expectations can in part be attributed to the differing perspectives of creator and audience. A creator of a work has a very different understanding of the levels of difficulty and affect in a work. Something, for example, that may have been very easy to create, may seem very impressive to an audience participant. Conversely, something that may have been quite difficult to achieve, may be barely noticed. Costello tries to design her works focusing on audience perception of technological effects rather than using technological complexity for the sake of it. Or to put it another way, she tries to use the power of simple technological ‘smoke and mirrors’ to create illusions, believing that what the audience perceives is more important in terms of creating experiences than the actual technology within the work. The discrepancy between her opinion of *Elysian Fields* and the audience’s, however, suggests that she had, without realizing it, lost faith in this belief.

Such differing perspectives between audience and artist are, of course, the reason why user evaluations are becoming an integral part of interactive art practice. While this was the first formal user evaluation that Costello had conducted on her own works, she had already conducted informal user tests, observing many people interacting with both *Elysian Fields* and *Sprung*. These observations had shaped her perception of the pleasures involved in these works but as we have seen, this perception was not entirely accurate. Informal observations were very revealing of key interface problems such as, for example, people’s failure to notice the time signals in *Sprung*. In contrast, the formal evaluation revealed much more detail about the affective and motivational aspects of participants’ experience.

The pleasure framework survey was particularly helpful in terms of identifying discrepancies between audience perceptions and artist’s aims. The framework was also effective in giving interviewer and participant a common language for discussion. Participants had few problems understanding the pleasures and they generated some very interesting comments. The framework survey was, therefore, a valuable part of the study methodology.
It is less certain whether the results will be effective in terms of future design directions. The pleasure framework survey did very clearly describe the different key pleasures in each work, and this enabled each work’s experience to be more accurately characterized. This will be useful in terms of future design directions because it will help the artist to remain focused on the important aspects of each experience. Creating an experience, like much design practice, is a question of balance. Changing the weight of one feature will have an effect on all of the others. Knowing which features need to remain more heavily weighted is, therefore, quite valuable.

One of the most interesting results, in terms of future directions, was realizing the affective power of *Elysian Fields*. The openness and ambiguity of the work seemed to make room for participants to create their own meanings and this made its emotional affect more personal. There was less pressure in this work to “get it” compared to *Sprung* but there was also less chance that people would feel that they had “got it all” like they do in *Spin*. This result questions the value of the artists’ original intention to increase the potential for goal driven interactions in *Elysian Fields*. While this change might increase the chances that the work will be more pleasurable for goal-driven participants, it risks destroying the affective power of the work’s openness. The important role sensation plays in this work’s pleasures indicates that it might provide a better direction to focus on when considering any changes to this work.

The lack of pleasure in fantasy that participants’ felt during their experience of *Sprung* indicates that the experiential aims of this work may need to be carefully reconsidered. Perhaps, given the current puzzle-like nature of the work, it would be better to focus on the trio of creation, exploration and discovery. Whichever path is taken, there definitely also needs to be a focus on strengthening the opportunity for participants to experience the pleasure of creation.

The correlation between finiteness and participants’ perception that *Spin* did not make them play was another interesting result. It suggests that there might need to be a focus on Berlyne’s category of uncertainty when redesigning the work’s potential to evoke the pleasure of discovery. The number of phrases used in the work had intentionally been limited to just 30, thinking that this would allow people to become familiar with them and that they would then begin to play. This did work for some people but may have caused others to too quickly feel that they had ‘got all there was to get’. The work may, therefore, need another level of change to continue arousing participants’ interest. It would be useful if this change also helped increase the opportunity for participants’ to feel the pleasure of creation.

### 5 Conclusion

These results suggest that the pleasure framework can be both an effective tool for the conceptual design of playful interactive art and a useful addition to formal user evaluations of this type of work. The results have also indicated several design directions for future versions of the three works under discussion. While it is too early to judge how useful these design directions will be, it is clear that the pleasure framework has been an effective tool for clarifying the pleasures that each work evokes.
The next stage of this project will involve the re-design and re-evaluation of the three artworks and will be reported on in future papers. The success of the framework within an interactive art context does raise the question of whether it could also be a useful tool for other kinds of interaction design. Although the categories in the framework were shaped by the project’s focus on interactive art, the theories that underpin it were all based on general studies of play and/or games. We think there is potential, therefore, for the framework to be applicable outside the art world. A possible future direction in this regard would be to test the practical application of the framework within another domain of interaction design. This broadening of the possible field of application would also require further theoretical work to properly situate the framework in relation to other existing design tools within that domain.

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