TEETER: A STUDY OF PLAY AND NEGOTIATION

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Abstract
Teeter is a game of negotiation. It explores how people interact with one another in uncertain situations. Using keywords and an object, the game is framed with specific contexts and provides an abstracted medium through which players interact. While some scenarios are more competitive and aggressive, others are more cooperative and harmonious. Rather than creating specific rules, the goal is to allow players to determine how the object will be used and what type of game they are playing. This is a study of how play can be simultaneously competitive and cooperative, depending on the context and negotiation of the users.

Author Keywords
Negotiation; play; competitive; cooperative, games

Introduction
In *Play Matters*, Miguel Sicart defines playing as "a form of understanding what surrounds us and who we are and a way of engaging with others" (15). He emphasizes that play is not always a positive activity; it is "a manifestation of humanity" that can be dangerous and unsettling (Sicart 16). In many of the social activities and games that we participate, there is a critical tension between competition and cooperation. This tension is the main subject of this study. Traditionally, games are categorized as competitive, cooperative, or collaborative (Zagal 25). Goals of the players are well defined with clear outcomes. However, experiences of bonding and antagonism are not mutually exclusive and can co-exist on many levels. In everyday situations, outcomes can rarely be simplified as winning or losing. Instead, the result is often a complicated experience with different gains and losses. Teeter is a project that aims to understand these different relationships and attempts to extract the underlying tension between competition and cooperation. At the heart of Teeter is the assumption that all players have agency in the development of their interaction and can change their experiences through negotiation. This paper will begin with an explanation of the initial concept and design development. It will then describe the prototypes and game components. And finally, it will end with descriptions and analysis of the different play tests.

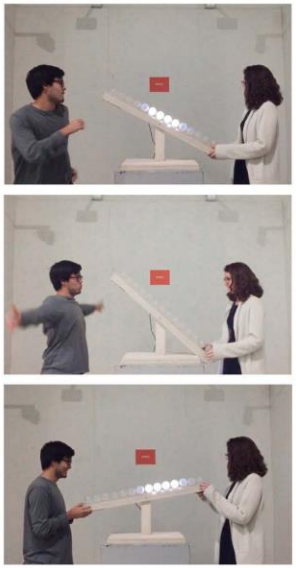

Figure 1: In this image, the group is using the object to "dance."

Design Process

Initially, this project was an exploration of how electronic wearables can mediate the relationship between our bodies and physical space. The main focus was on clothing and how it can produce interactive sensorial experiences that change the way we perceive the environment. However, it soon became clear that much of the effort was dedicated to the design of the physical artifact and its formal attributes. The initial concept revolved around a person-to-object relationship, rather than an object that fosters a person-to-person interaction. In addition to technical difficulties, the design of the rules and objectives did not allow for much freedom in the way that it could be used. In other words, the project could not be used as a research tool to discover or ask new questions since the end results have been mostly predetermined. From this first attempt, two important things were learned:

1. The object and/or activity should be designed with enough freedom to be used in different and unexpected ways
2. It is more interesting for the physical artifact to be a tool/mediator of inquiry rather than the main subject of study.

These realizations were the design basis for the new project Teeter.

Initial Prototype

The first prototype is physically a rough version of the final object. Made of foam core and tape, it exposes all the electronic parts and wires. The horizontal member connects to the vertical member at the center through a single wooden dowel. The horizontal member balances on the vertical member and can be rotated about the X-axis. The object is controlled by Arduino Uno and contains an accelerometer and a strip of LEDs. The LEDs move along the horizontal bar according to the direction of the tilt angle determined by the accelerometer. This prototype is not only designed to test the integration of software and hardware but also used as a way to develop the "game." The intent is to see how users interact with the object and how they interact with one another through the object. Rather than creating specific rules, the goal is to allow users to determine how the object will be used and what "type" of game they are playing (i.e. cooperative vs. competitive).

After the first round of testing, it was clear that the game needed to have more freedom to be played differently by different pairs of users. However, at the same time, the users needed basic guidelines and a few trials to begin their own game. The most difficult part of the game is allowing users to decide the nature of the game. Explicitly declaring that the game can be played competitively or as a team was not particularly successful. It needed another level of abstraction. The suggestion of including trigger keywords such as "ping pong," or "negotiation" was very helpful and was implemented in the next round of testing to achieve a more subtle hint/guideline.

The Game

In the final version, Teeter consists of two major components: keywords and the object. Both are necessary in order to have a balance of freedom and guidance.

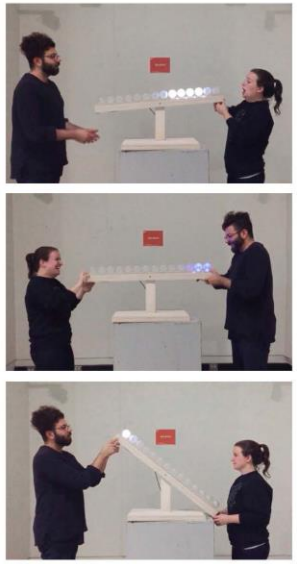

Figure 2: In this image, the group is using the object to "balance."

Keyword

Keywords structure the game with specific contexts. They provide an initial framework for the players to develop their own games. For the final testing, 4 keywords were chosen: "dance," "balance," "ping pong," and "wrestling." While "dance" and "wrestling" can be viewed on the opposite end of the cooperative vs. competitive spectrum, "balance" and "ping pong" are closer to the middle. In many ways, keywords are like similes that reference certain attitudes, interactions or even other games. They serve as arbitrary starting points that evolve in meaning and interaction as the games develop. Ideally, keywords can also be created by players at the beginning, giving them an even greater degree of freedom that may lead to completely unexpected results. However, for the purposes of this research, keywords were chosen beforehand for a more straightforward study.

Object

The physical artifact act as the medium through which the players interact with each other. The final object is designed to be minimal and abstract, with as little reference as possible to other games or tools. Made of birch plywood sheets and frosted glass ornaments, this prototype hides all the electronic components. The result is simply an object that rotates. The goal is for players to use this object in new and unfamiliar ways that manifest the nature of their negotiations. Beyond the simple act of "pushing" or "lifting," the object allows for more nuanced interactions in contexts of different keywords.

Play Testing

The game is set up in an isolated corner space of building 7 at MIT. It is a tall space with white walls and overhanging lights. The object is placed in the middle of the space on top of a table. An orange keyword sign is fixed on the wall opposing the object, visible from anywhere within the space. Players are led to the testing area and the following instruction is read/performed:

1. This is a two person game
2. Each of you must position yourselves on the opposite end of the object
3. You each have control over your individual end
   Quick physical demo of the mechanics
4. The goal is to not lose any of the 4 lights and keep them on for as long as possible
5. The light(s) should travel as far as possible to the ends without falling off the board
6. Each time a light is lost, the remaining lights change color as a form of notification
7. You may play the game as many times as you want
8. This is a game of [insert keyword] *point to the orange keyword sign*

Dance

In the first round of testing, the group is comprised of a male (player A) and a female (player B) who are friends. They played a total of 9 times. Throughout the games, actual dancing and the use of the word "rhythm" were frequently occurring. They communicated verbally during and in between games and constantly encouraged each other with positive

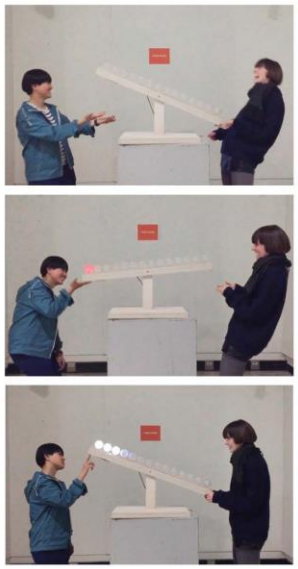

Figure 3: In this image, the group is using the object to "ping pong."

words. They tried to play as a team and had an open dialogue about mistakes and strategies. However, despite their commitment to work together, they had moderate success rate and the slowest rotation speed out of all the testing groups. One of the biggest difficulties was a lack of equality of visual sight line. Player B is taller than player A and was always in a position of power. Since player B stood on the right side of the object, she made the starting move every time, giving her more control. She also held the object more firmly than player A, sometimes unintentionally obstructing player B in interacting with the object. During their last two games, player A suggested the rule of only touching the object when the lights reach their respective ends. This greatly improved their success in keeping the lights on. Player B then commented that "the trick was giving each other control." Overall, their negotiation process was slow but pleasant. They both enjoyed the experience and were very enthusiastic about improving their coordination.

Balance

For "balance", the group is comprised of a male (player A) and a female (player B) who are friends. They played a total of 6 times. The players did not explicitly agreed to work together but instead instinctively collaborated throughout the games. This was the most communicative group. They talked to each other in between the rounds to discuss strategies and voice complaints. During the games, they would state "you" or "me" to clarify turns and improve timing. However, it was clear that after 3 games, Player B was in a position of power as she made the start move every time. They then switched positions in order to have a "fairer" game by letting Player A make the starting move. By the end, they were able to deviate from the initial set of instructions and developed a different goal for the game. Rather than letting the lights reach as far as possible to the end of the object, they tried to "balance" and maintain the lights in the middle. As a result, they made very slight movements and kept the turning angle of the object to a minimum. Their negotiations were explicit and efficient. It was a very organized partnership.

Ping Pong

For the game of "ping pong", the group is comprised of two females who are friends. They played a total of 5 times. Before starting the game, the group discussed in depth how to play ping pong using the object. They argued whether the object was the paddle or the ball and decided that their hands will be the paddle and the object with be the ball. Their movements and contact towards the object were light and quick, pushing up the object and then swiftly moving away. At times, the object hit the table before the players could reach in time to push back. Player B had slightly more control than player A in terms of vision and grip. Player B also frequently "sabotaged" player A by pushing before the lights passed the "midpoint." Although there was much laughter, little communication occurred during or in between games. There was no explicit discussions of strategies or fairness. After the third round, Player A was visibly upset by player B's tactics and appeared lackluster for the remaining 2 games. In general, very little negotiation occurred and the game ended with one winner and one loser. Player B had a much better experience than player A.

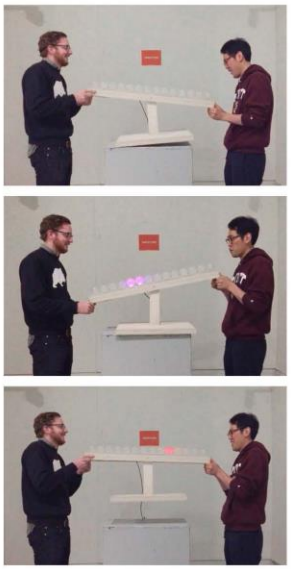

Figure 1: In this image, the group is using the object to "wrestle."

Wrestling

For "wrestling", the group is comprised of two males who are friends. They played a total of 3 times. Both players held the object very firmly and stood close to it the entire game. Neither player had more control over the object than the other. This group was the most violent towards the object, at times lifting it and pushing it off the table. After the first two games, they stopped fighting "physically" via the object. Instead they fought more mentally and focused on their own end of the object. No additional rules were explicitly created. Instead they implicitly pushed only up during their respective turns. Almost no communication occurred during or in between games. Ironically, the group had the highest success in keeping the lights on for the longest out of all the groups. However, they did not seem to enjoy the game very much and was the least enthusiastic of the 4 groups. When asked if they want to play again after the third round, player B said no and player A shrugged. It is unclear if they did not enjoy the "competitive aspect of the game" or if it became too easy once they have established a regularity of movement. For this team, there was no open negotiation. However, both players quickly realized that focusing on their own performance was a better strategy and instead achieved coordination through self-interest.

Conclusion

Keywords had an important role in influencing the "tone" of the game. Competitive keywords such as "wrestling" and "ping pong" were associated with more aggressive actions towards the object and less open dialogue between players. On the other hand, cooperative keywords such as "dance" and "balance" were associated with more gentle actions towards the object and more open dialogue. Competitive keywords were linked with higher success rates based on the length of the games whereas cooperative keywords were linked with more enjoyment based on the number of times played. However, none of the games played were purely competitive or cooperative. "Wrestling" and "ping pong" had moments of cooperation; "dance" and "balance" had moments of competition. Ultimately, the emotionally more enjoyable experiences were those in which "winning" or "losing" was not a clear line or taken very seriously. In best scenarios, players believe that they are playing against the object and algorithm, rather than against each other. Although comparisons of respective performances create a sense of excitement and increases overall energy. Ultimately, Teeter shows that play can be both positive and negative. One can cooperate and compete at the same time. One can also win and lose simultaneously depending on the definition. In many ways, play is a dynamic act of shaping and negotiating our interaction with others.

References

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