UNIVERSITY OF
GOTHENBURG

CHALMERS

Assignment 1 - Creativity Unleashed

Noah Márquez Vara

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1 APPLYING THE CREATIVITY METHOD

In order to find and create pilot gameplay ideas with some of the objects that were chosen, a systematic method of creativity was used. Systematic creativity is the way to use logic and reason, along with imagination and inspiration, to generate ideas that can be surprising, pragmatic, scalable and intuitive all at the same time. [1]

As for how the creativity method was applied for this assignment it will be first presented a briefly description of the development and thinking of the several ideas that came up to life. Notice that in this first section only a summary of the way the creativity method was used will be presented. In section 3 the three most interesting ideas will be presented with a higher level of detail.

In the beginning it was difficult to come up with interesting or innovative ideas, mainly because of pushing the thinking towards trying to be as creative as possible, while not going step by step. This kept narrowing the boundaries of thinking until a much more simpler way of creating the ideas appeared. Another approach instead of applying the whole method at first for the ten ideas was to look around the room and pick ten different objects for which a simple idea could appear from, which scales up the probability of being in the right direction. After that some simple modifications were made to try improve the characteristics of the object or increase the amount of possibilities it could offer.

In section 2 ten different one-line descriptions can be found for the ideas that were generated using the creativity method. However, as stated before, first it will be shown briefly how the method was applied to the ideas.

First idea it came to mind was a pencil. Pencils are highly used among people but that does not mean they cannot be improved and applied to an augmented reality gameplay. Some of the problems we can think of when talking about a pencil can be its finite length, the need to sharpen it, only has one color, etc. Some of these problems would not be such thing if the laws of physics were not a limitation, such as with the problem of having a finite length for the pencil. If a pencil was a digital object, you could add features to it, such as the ability to erase mistakes or embed notes on the wall. As an augmented reality object, a pencil could be placed in a real world environment and you could interact with it, or could be used to reshape the world around you, or used as a controller for other objects in the game.

Another example is a ball. A ball has interesting physical properties such as its size, weight, and bounce. If ball's properties were not ruled by the laws of physics, we could change its size, weight, color, texture, and bounce in order to play different types of games. One possible gameplay involving a ball in augmented reality could be a game of catch, meaning a multiplayer gameplay. The ball could be thrown back and forth between two players, with each of them trying to catch the ball. The game would be played in a real world environment with the ball being tracked by the augmented reality system.

An object that came to mind while exploring different possibilities was a rock. A rock as a digital object for an AR game could be used to create a virtual environment, such as a mountain or a cave. Additionally, a rock could be used to create interactive experiences, such as a game where players have to climb a rock wall or solve a puzzle by moving rocks around. The rock could also be a portal to another world or dimension, a source of magical power, alive and sentient, indestructible, or a black hole that sucks everything around it. Moreover, we could give the rock the ability to float or levitate, emit light or sound, and change its shape or size.

A plant can be an interesting real-world object to consider. It could be used to create a virtual environment, such as a garden where the player has to take care of it or a forest. Some possible characteristics for a plant inside an AR gameplay could be making the plant interactive, responding to player actions such as being watered, being given sunlight, or being touched. The plant could also have a realistic appearance, providing a more immersive experience for the player.

An umbrella could be made more interesting for an AR game if it was made of materials that are not typically used for umbrellas, such as metal or glass. Moreover, some possible umbrella's characteristics could be the ability to make the umbrella spin, to make the umbrella float in the air, etc. In a gameplay, the umbrella would be used as a shield against enemy attacks. It could also be used to float over obstacles or to spin and deflect enemy bullets.

Another idea could be with a car because it has many interesting physical properties, such as its weight, its aerodynamic shape, and its engine. If a car was a digital object, we could change its properties to make it more efficient for example. Some possible modifications that could be made to a car without taking into account the laws of physics include making the car invisible, giving the car the ability to fly, etc. Ideas for gameplays with these properties can come up, such as making the car invisible and using it to sneak around enemies or avoid detection, or fly the car through an obstacle course or race track.

A pillow would be great to use for a pillow fight AR game. The pillow would track user's movement and translate it into in-game movement. The game would also have haptic feedback capabilities, so the user would feel when they were hit in the game. Some properties which would be interesting for this object would be the ability to modify its materials depending on the fight strategy the player wants to follow, or the ability for the pillow to emit soothing sounds, perfect for slowing down the opponent.

A fork could be used by the player in an augmented reality game to catch food that is falling from the sky. The player would need to be quick and accurate in order to catch as much food as possible. There would be different types of food, and each type would be worth a different amount of points. Some characteristics the fork could have would be catching multiple pieces of food at once, be extended to catch food that is far away, and it can also change its shape to catch food in different ways (e.g. bending, widening, etc.).

We can also imagine an AR game in which the player would use scissors to cut and reshape the world around them. For example, they could cut a hole in a wall to create a shortcut, or cut a tree down to create a bridge. The player would also need to be careful though, as cutting too much could cause the world to collapse. The properties of such scissors would include the ability to cut through anything, no matter how thick or tough, never needing to be sharpened, being able to adjust the size of the blades to fit the material being cut, etc.

Last but not least, a bowl could be used by the user in an AR game to choose different ingredients to be put into it, as well as adjusting its size to accommodate different amounts of ingredients. The player would then have to cook the dish by following a set of instructions. Some interesting characteristics for such bowl would be to cook without any heat source, cook food at any temperature (even below freezing), etc.

2 IDEAS GENERATED USING THE CREATIVITY METHOD

1. A pencil used to draw objects that come to life so the player can interact with them (e.g., draw a bridge to allow the user to cross a gap).
2. A ball whose size, weight, and bounce can be changed in-game in order to create different kind of games, such as tennis or catch.
3. A game of rocks in which some could be indestructible or invisible and used as a weapon, shield, or a tool to help players progress through the game.
4. A responsive and interacting plant that could react to player's stimuli in its own augmented reality garden.
5. An umbrella that would be used as a shield against enemy attacks, to float over obstacles, or to deflect enemies' bullets.
6. A car that can go through walls to reach shortcuts or hidden areas and has the ability to fly through an obstacle course while collecting coins.
7. A pillow that could be either soft and fluffy, or made of a harder material (with its pros and cons), for a pillow fight.
8. A shape changing fork used to catch food falling from the sky, winning different amounts of points according to the type of food catched.
9. Some unique scissors used to reshape the world around you. For example, make a hole in a wall to create a shortcut.
10. A resizable bowl in which accommodate different amounts of ingredients so the player can cook a dish following a set of instructions.

3 THE THREE MOST INTERESTING IDEAS

1 Plant

Elements: roots anchored to the ground to take water and nutrients from the soil, stems that support leaves and flowers, and also transport water and nutrients through the plant, seeds, and reacts to sunlight through photosynthesis to produce food.

Process:

1. First the player would be able to choose between a large variety of plants available, all of them ready to be interacted with in an augmented reality gameplay.
2. Plants would be responsive to user stimuli helped by different kind of sensors, such as humidity ones. This would allow the gameplay to follow the user's progress of creating his own garden/forest.
3. One interesting property for the plants would be that they could not freeze, and that they could grow in any kind of climate or conditions. This will allow players to get to know any plant of any region of the world, so they will get to study them in detail.
4. Despite the fact that any plant would be able to survive to any conditions, the user must be sure that they take care of it, watering it and putting it the right amount of time into direct sunlight.

As for the game design patterns in the plant gameplay we could think of some of them:

- **Unwinnable Games**: this game would not have any clear winning condition. The game is just for the pure pleasure of the player of having their own garden, grow up some plants (even exotic, because no climate conditions apply), and take care of them.

- **Skills**: players would have to show that they are able to commit to take care of their plants. They need to have the right amount of water and direct sunlight in a daily basis.
- **Rewards**: if plants are well taken care of, players will get rewards, such as seeds for buying special and unique types of plants, or improving their garden or gardening tools.

Some ethical and social issues that could arise from an AR gameplay in which players will create their own garden with plants are as follows:

- Players may create gardens that are aesthetically pleasing but lack in plant diversity, which could lead to problems with inbreeding and disease.
- Players may use harmful chemicals and pesticides in their gardens, which could negatively impact the environment and human health.
- Some players may create gardens that are excessively large and require excessive amounts of resources, which could lead to environmental degradation.

2 Umbrella

Elements: the canopy is the fabric or plastic that forms the top of the umbrella and provides protection from the rain. The ribs are the metal or plastic rods that support the canopy and open and close the umbrella. The stretchers are the metal or plastic bars that connect the ribs and provide support for the canopy. The ferrule is the metal or plastic ring that holds the ribs together at the top of the umbrella. The handle is the part of the umbrella that you hold onto to open and close the umbrella. The tip is the metal or plastic point at the bottom of the umbrella that helps to keep the umbrella on the ground.

Process:

1. The first step is to identify the points on the umbrella that will be used to attach the AR functionality. This could be done by adding AR markers or by simply painting the tips of the umbrella's spokes.
2. Next, the AR software needs to be programmed to recognize the markers and respond accordingly. For example, when the player holds up the umbrella to block an enemy attack, the software could make the umbrella appear as a shield on the screen. Alternatively, the umbrella could also be programmed to float over obstacles or deflect enemy bullets.
3. If the umbrella is to be used as a shield, it would need to be made durable and large enough so that it can cover the player's body, and also have a sturdy handle.
4. If the umbrella is to be used to float over obstacles, it would need to be made lighter so that it can easily be lifted.
5. If the umbrella is to be used to deflect enemy bullets, it would need to be made of a stronger material, such as bulletproof glass. This can be related to the property of being used as a shield.

As for the game design patterns in the umbrella gameplay we could think of some of them:

- **Arenas**: open locations in game worlds that naturally become battle grounds. Any spot in the real world could become suitable for a fight between two players.
- **Ability loses**: we could add a functionality that made the umbrellas have a certain amount of health so that players have to choose wisely when to use them as a shield.
- **Armor**: the umbrella is a game item that can protect from damage.

Some ethical and social issues that could arise from an augmented reality gameplay in which players fight with umbrellas that work as shields or can be used to fly over obstacles include:

- The potential for players to get injured while playing the game, either from falling off obstacles or from being hit by other players' umbrellas.
- The potential for players to become addicted to the game and neglect their real-world responsibilities, such as work, school, or family.

3 Scissors

Elements: the two main elements of scissors are the blades and the handles. The blades are the sharp, metal parts of the scissors that do the cutting. The handles are the parts of the scissors that you hold onto. There is also a small metal piece called a rivet that connects the blades to the handles.

Process:

1. First of all, we need to decide what type of modification is needed for the scissors. For example, if the scissors need to be able to cut through metal, then they will need to be sharpened. Or maybe we want to use them to cut a tree down to create a bridge.
2. Then we need to make the necessary changes to the scissors. This could involve sharpening the blades, changing the handle, or adding a new type of blade.
3. We just then need to use the scissors to reshape the world around us, while trying to reach the end of an obstacle course.

Scissors were chosen over other ideas because people are well aware of how scissors work, so designing a gameplay around them should not be difficult. This game would allow people reshape the real world in any form they wanted, just by using the scissors to modify anything. Not only players would be able to reshape the world freely, they would also be able to do it for a purpose such as going through an obstacle course merged into the real world.

As for the game design patterns in the scissors gameplay we could think of some of them:

- **Arenas**: the real world becomes an immersive arena in which the player can reshape what they have around them.
- **Tools**: scissors are the main game element which is used to provide actions, or make them easier to perform. Scissors are the player's tool to modify the world as its own need just for fun or for completing and getting through an obstacle course.
- **Check Points**: in case the player decided to use the scissors to go through an obstacle course, they will need to arrive to locations inside the game directly related to the progress of some goal, in this case, reaching the end of the obstacle course.

Some ethical and social issues that could arise from an augmented reality gameplay in which players will reshape the world around them with some scissors are:

- The game could lead to players becoming more aggressive, as they would be constantly cutting and shaping the world around them to their own liking.
- The game could also lead to players feeling a sense of entitlement, as they would be able to change the world around them however they please without any consequences.
- The game could also be used to harm public property, as players could use it to cut out images of public buildings or landmarks and place them in random or dangerous locations.
- The game could also be used to invade people's privacy, as players could use it to cut out images of people's homes or personal belongings and share them with others without their consent.

REFERENCES

[1] Erika Karp. *Systematic creativity: Everything you can imagine is real*. 2021. URL: https://www.creativityculturecapital.org/blog/2021/09/13/systematic-creativity-everything-you-can-imagine-is-real/.