



# Exploring Aesthetics of Interaction

**Authors Name**  
Joey Marcello Hobrecker

**Student Number**  
1988476

**Word Count**  
984

## Introduction

The readings and lectures about Aesthetics of Interaction helped me explore how I can engage users with my products by creating interesting interactions.

The Interaction Frogger Framework creates intuitive interactions with a coupling between the action of a user and the goal of a system across time, location and others. Good inherent, augmented or functional feedback and feedforward are important [10]. It connects to my vision of natural interactions with electronic products and to my focus on efficiency. I'm curious how the framework functions with AI; a combination that can create the seamless interactions I dream of.

Experience prototyping helps you experience, demonstrate and explain your ideas [8]. It helps find problems and avoid making big changes later in the process. This improves efficiency and makes the technique interesting for me.

Documenting the process helps track ideas, store concepts and thoughts and reflecting. It stimulates collaborative thinking. There are four types of pages: exploration, inspiration, storage and synthesis [9]. This method is not

future resistant. Documenting should be done digitally supported by an AI system and in the future it will be done in a VR environment.

Assigning personalities to objects creates metaphors that develop intuitive designs. It supports brainstorming and makes behaviors relatable, improving user experiences [6]. The method stimulated creativity and motivation in designing our Waking up experience; it made it fun.

Affordances, the actions that seem possible with an object or environment, are used to create intuitive interfaces. There are [11]:

- Perceived and real affordances
- Feedforward and signifiers

Affordances are important for creating natural interactions and can be used in design for VR. They will be important in the future.

Shape changing interfaces (SCI) have dynamic affordances and show new functions with movement [7]. They create exciting interactions, but can only be experienced a certain amount before getting old.

Here is a summary of the other important papers for me:

- **Haptics:** Creates immersive interaction, resilience based feedback engages users [12]. I experienced haptics in controller for game, know that it creates immersion, it works
- **Extreme characters:** Designing for extreme characters, explore unique situation, reveal features [3]. Opinion: fun, does not always lead to useful results
- **Physical movement Interface:** Interface with physical movement create rich, natural interactions [1]. Opinion: have had interaction in VR with movement, connects me to product. Designing interfaces with movement huge role in future, should be explored more.
- **AI in Design:** Three important strategies; AI is overall aesthetic, controls aesthetics beyond interface, it is a design material with it own limitations [4]. Opinion: AI first human invention with limitless possibilities, should never be connected to rules; it can be whatever you want.

Not all the papers could be discussed because of the word count.



## Visual Account

### Figure 1

Interaction Frogger Framework [10] helped connect actions users to function system with feedback and feedforward;

- Alarm that you chase
- Alarm where you sing karaoke
- Both require specific actions linked to function

Created concepts for extreme characters [4]

- An alarm for Scrooge McDuck; it would spend money on Amazon if you don't wake up on time.

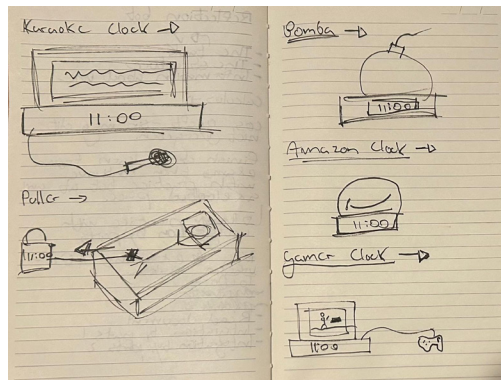


Figure 1- First Brainstorm 1

### Figure 2

Experience prototyping game alarm [8].

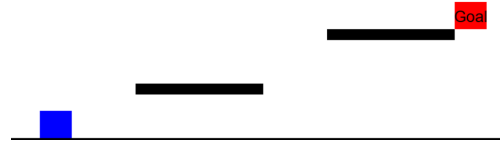


Figure 2- Prototype Game Alarm

### figure 3,4 and 5

Augmenting Fun and Beauty's [2] 10 principles inspired us to create fun interactions and made us move away from our darker concept for a waking up experience. Affordances of Shape-Changing Interfaces [7] helped us create a product that changes it's behavior based on actions of the user; it existed from 3 parts that would all react differently to the user.



Figure 3- Prototype 1



Figure 4- Prototype 2



Figure 5- Prototype 3





Figure 6- Prototype 4

### figure 7 and 8

Designing the Behavior of Interactive Objects [6]: change our objects (our alarms) into characters with personality; create a bond with them.

Move to Get Moved [1] integrate movement into interaction by experiencing the movements and interactions ourself;

- Alarm that runs ways
- Alarm that you turn off by squeezing



Figure 7- All Three



Figure 8- Forrest First Prototype

### figure 9. 10. 11. 12. 13 . 14 .15 and 16

The Interaction Frogger Framework [10] helped us create one aesthetic for all the objects. The entire sequence of our interaction shows a strong coupling between actions and functions. Each object's response is caused by action of user.

Aesthetics of Haptics [12] helped us create a satisfying haptic experience.

Soft Robotics [5] made us realize the possibilities of soft robots and make one of the objects a soft robot.

Designing the Behavior of Interactive Objects [6] inspired us to create a deeper interaction by assigning personalities to our objects.

Move to Get Moved [1] inspired us to create a moving object.

The object also have clear affordances [11]; the action you can undertake are clear.

Experience prototyping [8] helped us improve our final version by having people try out the system; the improvements are shown in the video.

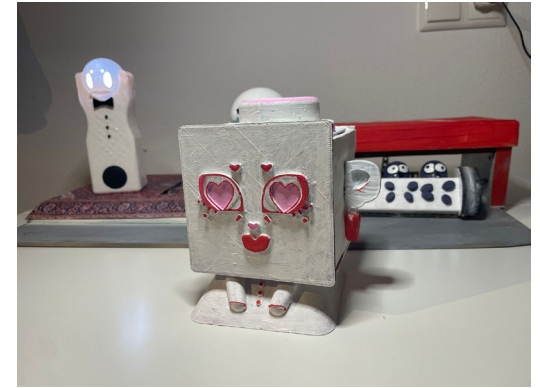


Figure 9- Ruby

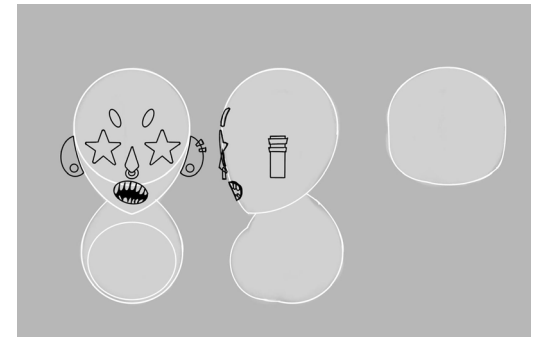


Figure 10- Proteus Drawing

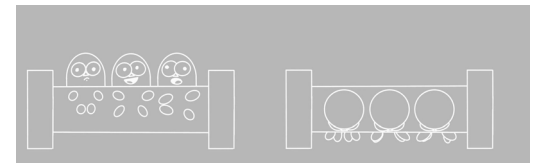


Figure 11- Forest Drawing



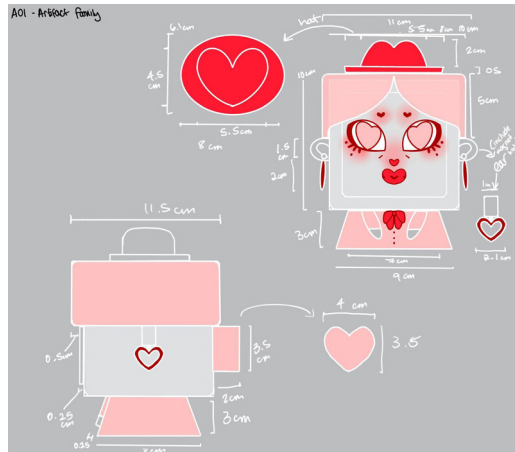


Figure 12- Ruby Drawing

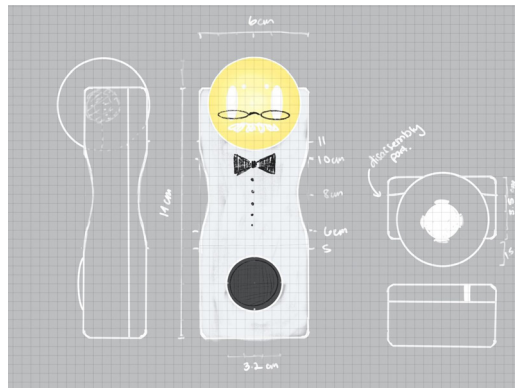


Figure 13- Alfred Drawing



Figure 14- Alfred



Figure 15- Proteus

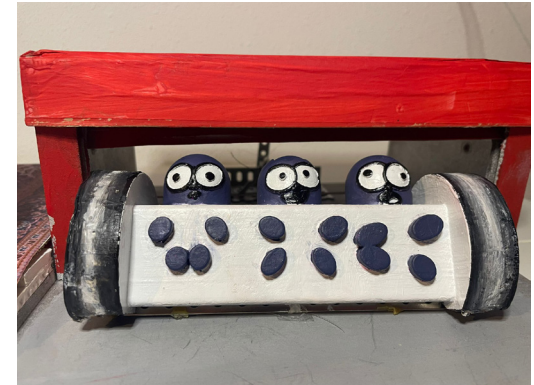


Figure 16- Forrest

## The conclusion

My design process was based on efficiency and rapid development and the aesthetics of interactions where often an afterthought. I know see how the aesthetics of interaction connect to my vision of natural interactions with technology and see it's importance. I will change my process to reflect this realization, using the papers and lectures as a concrete foundation. The most important concepts and realizations I will use to develop my process are:

- The Frogger Interaction Framework [10]
- Experience prototyping [8]
- Prioritizing user experience over functionality
- Shifting my focus away from efficiency and speed

Link to video: <https://youtu.be/ivLfvtPOH-g>





## References

- [1] Caroline Hummels, Kees C. Overbeeke, and Sietske Klooster. 2007. Move to get moved: a search for methods, tools and knowledge to design for expressive and rich movement-based interaction. *Personal Ubiquitous Comput.* 11, 8 (December 2007), 677-690. <https://doi.org/10.1007/s00779-006-0135-y>
- [2] J. P. Djajadiningrat, C. J. Overbeeke, and S. A. G. Wensveen. 2000b. Augmenting fun and beauty: a pamphlet. In *Proceedings of DARE 2000 on Designing augmented reality environments (DARE '00)*. Association for Computing Machinery, New York, NY, USA, 131-134. <https://doi.org/10.1145/354666.354680>
- [3] J. P. Djajadiningrat, W. W. Gaver, and J. W. Fres. 2000a. Interaction relabelling and extreme characters: methods for exploring aesthetic interactions. In *Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques (DIS '00)*. Association for Computing Machinery, New York, NY, USA, 66-71. <https://doi.org/10.1145/347642.347664>
- [4] Jesse Josua Benjamin. 2024. Aesthetics of Software Architectures. Guest Lecture, Eindhoven University of Technology, October 1, 2024.
- [5] Jonas Jørgensen. 2023. Towards a Soft Science of Soft Robots. A Call for a Place for Aesthetics in Soft Robotics Research. *J. Hum.-Robot Interact.* 12, 2, Article 15 (June 2023), 11 pages. <https://doi.org/10.1145/3533681>
- [6] Marco Spadafora, Victor Chahuneau, Nikolas Martelaro, David Sirkin, and Wendy Ju. 2016. Designing the Behavior of Interactive Objects. In *Proceedings of the TEI '16: Tenth International Conference on Tangible, Embedded, and Embodied Interaction (TEI '16)*. Association for Computing Machinery, New York, NY, USA, 70-77. <https://doi.org/10.1145/2839462.2839502>
- [7] Marianne Graves Petersen, Majken Kirkegaard Rasmussen, and Johan Trettvik. 2020. Affordances of Shape-Changing Interfaces: An Information Perspective on Transformability and Movement. In *Proceedings of the 2020 ACM Designing Interactive Systems Conference (DIS '20)*. Association for Computing Machinery, New York, NY, USA, 1959-1971. <https://doi.org/10.1145/3357236.3395521>
- [8] Marion Buchenau and Jane Fulton Suri. 2000. Experience prototyping. In *Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques (DIS '00)*. Association for Computing Machinery, New York, NY, USA, 424-433. <https://doi.org/10.1145/347642.347802>
- [9] Niek Rutten, Jef Rouschop, Louise Mathiasen, Oscar Tomico, Bruna Goveia Da Rocha, and Kristina Andersen. 2022. Flipping Pages: Exploring Physical Workbooks as Reflective Method for Documentation. In *Nordic Human-Computer Interaction Conference (NordicCHI '22)*. Association for Computing Machinery, New York, NY, USA, Article 90, 1-14. <https://doi.org/10.1145/3546155.3547296>
- [10] S. A. G. Wensveen, J. P. Djajadiningrat, and C. J. Overbeeke. 2004. Interaction frogger: a design framework to couple action and function through feedback and feedforward. In *Proceedings of the 5th conference on Designing interactive systems: processes, practices, methods, and techniques (DIS '04)*. Association for Computing Machinery, New York, NY, USA, 177-184. <https://doi.org/10.1145/1013115.1013140>
- [11] Victor Kaptelinin. 2014. Affordances Retrieved November 7, 2024 from <https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/affordances>
- [12] Wendy Dassen and Miguel Bruns Alonso. 2017. Aesthetics of Haptics: An Experience Approach to Haptic Interaction Design. In *Proceedings of the 2017 ACM Conference Companion Publication on Designing Interactive Systems (DIS '17 Companion)*. Association for Computing Machinery, New York, NY, USA, 254-259. <https://doi.org/10.1145/3064857.3079156>



