Roll, Duck, & Cover!

A collaboratively produced, critical game that generates a discussion around the visual representation of nuclear warfare in media.
Abstract

This research project explores how we can apply Emerging Design Landscapes such as Critical Design and Collective Creativity, in combination with traditional fields of visual communication to address societal challenges in cooperation with society.

In particular, this paper aims to question the visual representation of nuclear warfare, and how we could utilize Peircean Semiotics to better understand set representation.

The design outcome is a critical board game that at its core aims to create a discussion around the visual representation of nuclear warfare today and act as a learning platform that would help its user better understand the practice of semiosis.
Keywords
Nuclear Weapons, Semiotics, Critical Design, Collective Creativity, Media Image representation, Game design, Societal challenges.
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1. Introduction

This chapter presents the reader with an overview of the thematic of this project as well as a description of what was conducted during this project.

1.1 Background

I was interested in conducting this research due to my background as a photojournalist for several years. As of recently, I have developed a particular interest in the visual representation of nuclear missiles by mass communication media. I defined my observations to be related to the issue of the visual representation of nuclear warfare by mass communication media in a sensational matter by purpose or not. I often observed an overuse of images that represented nuclear missiles in action, mushroom clouds, missile ranges. This was occurring across different platforms of mass media communication. This overuse of visual representation leads me to ask the following questions, How do we read these images?, Do they reflect the actual level of threat? And where do all these images come from?

How do I read these images?

At its core, every image is a sign. The process of giving meaning to these signs is called signification. To better understand the overuse of nuclear representation by mass communication media, I first had to know how we perceive images. It is crucial to understand that different people interpret signs differently. We understand images based on our background, knowledge and previous experiences. This is the foundation of semiotics, the science of signifying in its purest form.

Where do all these images come from?

It is essential to understand the importance of semiotics in relation to mass communication media since that is the source from where we receive these images. We often perceive communication by visual representations as a linear process, but semiotics teach us to treat it more as an exchange of meaning. The message that is sent can and will have multiple valid outcomes. Today, mass communication media and social media represent one our primary sources of information on a daily to day basis. This all-time access to instant information allows it to play an essential role in the how we perceive the events that surround us and how we discuss about them.

Do they reflect the actual level of threat?

Due to the historical context, nuclear warfare visuals do represent a somewhat realistic scenario. It is something that has happened in the past, and these weapons are in existence thus legitimizing the threat.

However, the use of extreme visuals (Nuclear mushroom clouds) in articles for sensational purposes has often been used to attract audiences as nuclear warfare sells the story. Once multiple countries on our planet possessed nuclear weapons this lead us to think about security
measures in case of a surprise attack. “Duck and Cover” (Fig 1) is a social guidance film that was funded by the US Federal Civil Defence Administration. It was written by Raymond J. Mauer, and directed by Anthony Rizzo of Archer Productions. (Archer Productions 1950)

This educational movie presents one of the first visual representations of what to do in the case such an event would occur. It is hard to say if it reflected the actual level of threat that existed back then or if it added to the fear and hysteria. This guidance film massively neglects nuclear fallout as a danger, information that was either unknown or withheld from the public by purpose. In the end, this determines if Duck and Cover was a poorly executed safety action, or it was designed to prepare whole generations to the ideological challenges of the upcoming cold war between the Soviet Union and The United States of America.

Today we observe mass communication media organizations use the same fear and sensitization to generate widespread interest in their work. An example of media using this method is that of the channel “Russia 24” in their video called “Inviolable stock: what should I take with me to the bomb shelter?” it uses many different nuclear visual representations and a provocative title to ignite the same historical fear. (Russia24)

I believe that there is nothing wrong with reporting about nuclear warfare or using the visual representation of nuclear warfare. To me, this represents an opportunity for design intervention. We can create something that is critical by nature and helps us move this phenomenon from the digital world to the physical with the aim to create a discussion.
I don't claim to understand the extent of the nuclear warfare threat or try to expose sensationalised visual representation from the real danger. This basic paper alone cannot answer all these questions but instead build a basis for extended research on the topic and provide a framework on how we could design in conversation with society to challenge norms, and generate critical artefacts. The design outcome aims to create a satirical design game that applies Semiotics to cause a discussion around the visual representations of nuclear warfare.

1.2 Research question
For this research and design project the hypothesis will be the following: By Combining the theories of Collective Creativity, Critical Design and Peircean Semiotics with visual communication, an effective framework will be created. Using this framework the development of a critical board game, that engages people in discussion around the representation of nuclear warfare in media, will be achievable. To do so, I state the following question:

Can we use an experimental workshop application of visual semiotics in game design to create a discussion around the societal challenge of the nuclear warfare threat?

2. Theoretical Background

2.1. Semiotics
What is semiotics?

The study of Semiotics tries to understand the systematized processes of meaning-making through communication and reasoning. Semiotics explores the study of signs and symbols as a significant part of the communication process in general. The first academic origins of Peircean semiotics are from the second half of the 19th century. (Jappy, 2013)

2.1.1 Peircean Semiotics

Why Peircean semiotics? For this project, I mostly refer to Charles Sanders Peirce and his triadic system of Semiotics, as this system attempts to describe processes of signification in general and thus also includes visual imagery (Jappy, 2013). My use of Pierce theory is focused on the triadic relation between the object, the sign, and the interpretant. In this model, the object is whatever is being communicated, and has the potential to be anything, but is defined by its relation to the sign and the interpretant/representant. The sign communicates the object to the interpretant and thus can be anything. To do so it has to cross into the existential and perceivable world to be understood. (Fig 3).
Nevertheless, it has also to cross into the existential and perceivable world to be understood. The interpretant is the effect the sign has on the interpreter and is understood by the interpreter previous understanding (Jappy, 2013).

The following example shows us how such a model works in practice: The image below is the so-called “Doomsday clock” it is a sign which represents the likelihood of a human-made global catastrophe. The clock represents an analogy for the threat of global nuclear war. (The Bulletin of the Atomic Scientists)

The sign in this example is the symbol presented in (Fig 4)

The object could be the knowledge of the nuclear threat as understood by the creators of the image (The Bulletin of the Atomic Scientists.)

The interpretant, in this case, could be your understanding of this image and how it impacts your perception and future interpretation of similar signs. For some people, this could mean that we are medium far to nuclear threat based on their knowledge of this concept, but to other people, might read it as a regular clock and it might mean that its nine minutes to midnight/ midday.

2.1.2 Application for our project

We have selected the theory of Peircean Semiotics with the purpose of analysing visual representations of nuclear warfare threats during our co-creative workshops. This is done to understand better how we perceive these images and to discover application possibilities of Peircean Semiotics to our design outcome.

Our design outcome aims to use basic Semiotics to generate a dialog related to the representation of nuclear warfare visuals within the game and as a learning opportunity itself of the underlying mechanisms of semiotic processes.
2.2. Collective creativity

What is collective creativity?

“Collective creativity” and “co-creation” refer to the act of two or more people engaging creatively. (Sanders and Stappers, 2012). Co-creation is a broad term with many applications ranging from the physical to the metaphysical and from the material to the spiritual. (Sanders and Stappers, 2012)

This process often involves both professionals treating an issue, as well as non-professionals who are also affected by the issue or whom might have their expertise around the issue. Within design, this could be visualized as the designer contributed using their knowledge and expertise within the field of design to facilitate a dialogue with other non-designers. In another hand, the non-designers bring their expertise and experiences to the exchange. If collective creativity is applied across the whole span of the design development process, we can call it a particular instance of co-creation referred to as co-design. (Sanders and Stappers, 2012)

These practices are often referred to as emerging design landscapes where the practice focuses less on the product But rather, and more to the design solutions it can contribute to. The societal value of co-creation is fueled by aspirations for long-term and more sustainable ways of living. (Sanders and Stappers, 2012).

2.2.1 Application

Our application of co-creativity will be in the setting of several workshops. The workshops will act as a zone for discussion and understanding. It is crucial for the participants to be fully involved, as we want to be in an exchange of feedback, rather than in just an observatory setting. We will have delimitations towards the extent of their participation. Because of the role-playing nature of the game, a combination of observational information in conjunction with the exchange of feedback will be the preferred way to approach the workshops. On the other hand, our limited timeframe and lack of funds will influence the extent at which we can use co-creation within this project.

2.3. Critical design

What is Critical design?

Critical design uses speculative design proposals to challenge preconceptions, to raise questions and to provoke debate (Raby, 2007, p.94).

Critical design is the opposite of affirmative design. According to the proponents of critical design, the vast majority of designers create an affirmative design, because they work within a certain ideological context, and their design aligns with this context instead of defying it (Dunne & Raby, 2001, p.58).

It was important for our project to go beyond the existing perceptions of nuclear warfare visual representations and start treating the matter by generating dialog and breaking the norm of what a game is or what the function of a game can be.
2.4. Critical Play

What is Critical play?

Critical play reimagines what a game is. A platform for creative expressions, learning opportunities and dialog about social issues. Flanagan (2009). This takes us away from the traditional role of activity to unwind and entertain.

There is a large number of existing examples on how games utilize the playful interaction, to create spaces for critical awareness and discussion on social issues.

Fig 5. Model for “Critical play game design” (Flanagan 2009)

Flanagan encourages designers to set goals that create meaningful play and sets equally weighted value goals. Develop rules and constraints that support the values. The designer is encouraged to develop different playstyles to provide non-competitive alternatives to competitive ones. Upon developing the prototype, and play the game with a wide range of audiences, during this iterative process, you not just test the game but verify values and revise goals. Repeat the process until the results reflect your goal and values.(Flanagan 2009)

2.4.1 Application

Our decision to use a board game to move the discussion from the digital world to the physical world to generate dialog on nuclear warfare visual representations was highly supported by this model and critical play in general. Furthermore, we insisted that the behavioral changes that occur while playing in person were crucial to the success of this game. The combination of these three approaches gave us a great theoretical background for our game design and played a critical role in shaping our method.

3. Method

The following chapter explains how the theoretical background will be applied to the research and design process.

3.1 Workshop

The theory of Semiotics and the subject of nuclear weapons are both challenging and require a certain amount of acquaintance with the topic to be understood. I have developed the workshops with other students and teachers from the university. In this project, I will use Peircean Semiotics, in particular, the triadic relation between object, sign, and interpretant. This is done to aid my research and the consequent understanding of how the participants perceive the visual representations that surround them related to nuclear warfare. During the performance of these workshops, I wish to avoid the occurrence where the users playing the game feel forced to act in any expected way or feel that our opinions and beliefs are imposed on them. To create this tool, I will use among other things the practice of co-creation in workshop formats. Where I expose participants to a prototype and observe the gameplay along with the discussions they conduct.
and the feedback they provide. To do so, I will use the qualitative method in this project to pursue behavioral observation. However, it is important to note that the scope of these workshops is limited because of the challenges we faced recruiting participants who were not willing to contribute over a set of several workshops and the short timeframe of ten weeks.

3.2 Design process and outcome
In the following chapter, the design process of the board game will be outlined. As mentioned in the previous section, the aim is to develop a board game (using the theory as a framework). A board game that grants a safe place for discussion concerning visual representation of nuclear warfare by mass communication media and uses Semiotics as a gameplay element that aims to increase the players understanding of the visuals that surround them every day.

This design process is made possible by co-creational workshops. The design outcome of the workshops investigates our understanding of said visuals and stimulates a conversation around the issue. This process will be manifested as a physical six player board game. According to Flanagan (2009, p. 253), games can offer a "third space" a place that provides a safe place to discuss social issues.

4. Design research
This chapter presents the reader with an overview of the Design research conducted by me before, and during the design implementation of the game.

4.1. Case studies
For this project, I conducted two in-depth case studies of successful games that either dealt with the topic of nuclear warfare or were critical of their nature. By analyzing these games not only did I get design relevant information for critical modern board games, but I also gain an understanding on how our approach towards nuclear weapons has changed since the 1960s in game design.

4.1.1 Bloc by Bloc
The Insurrection Game Bloc by block is a relatively modern board game it was launched on April 12, 2016, on Kickstarter. (Kickstarter, 2018)

Fig 5. Image from Bloc by Bloc gameplay

This game deals with the thematic of rioting on the streets. Each player takes on the role of a faction which for any reason has rebelled against the government. In this game, the opposing forces are seeking for change. Each player controls a faction of revolutionaries fighting back against the State. The insurrection is successful if occupations are built in all State districts before time runs out and the military arrives.
The game is designed for a four-player scenario but can be played by two or three people as well. The map consists of square pieces that in each game generate a randomized map. (Out of order games) This game featured a countdown system similar to my doomsday clock concept where different events and cards would move the time forward and backward creating a dynamic and changing game length. Furthermore, the game featured different fractions that worked together to overthrow the police, but on the other hand, could win alone on a personal hidden agenda.

The game suffered from a solid learning curve, and complex gameplay. Having many different game components such as cards, agendas, police & police trucks, players, looting tiles, building tiles, and barricades; did not help make any easy to use or print. This showed me that the primary intention of this game was not to be printed but rather be sold as a product. The game did generate some dialogue and communication throughout it, but it made me realize that if I wanted a game to create discussion, I had to design a specific module or rule to evoke so.

4.1.2 Nuclear war the card game:

Nuclear war is a card game were all the players fight each other with nuclear weapons. The main aim of the game is to destroy all the other players to win. Developed in 1965 by Doug Malewicki, an aerospace engineer, the card game has achieved cult status and has evolved into a classic, and has also been recently relaunched on Kickstarter to celebrate its 50th anniversary. (Kickstarter, 2018)

This game is designed to be played in a quick paste and heavily relies upon satire. It leaves no room for discussion regarding the issue of nuclear weapons, and it features a simple style that resembles comics from the 60s.

Fig 6. Images of the cards from the game Nuclear War (Kickstarter 2018)

This game reflects the fascination and the fetish towards the power of the atomic weapons era of 1960. I did not get the chance to properly treat this game as a case study since I was not able to acquire a copy of this game.
Therefore, I analyzed the information that was available on their website. This game provided an excellent example of how the topic was approached in the past. Furthermore, it revealed to me that our game would have to be fun and playable primarily, in order to then be able to then introduce a semiotic discussion around the visual representation of nuclear weapons.

4.1.3 Application to prototype

Since this was the first time for me to design a board-game, there was a steep learning curve concerning the game design. Conducting case studies help me explore the functions within a board-game. Further research was carried across several different games to identify the optimal mechanics to build the first prototype. The following game mechanics were chosen to represent a base on which we would then iterate through the co-creational workshops.

The prototype where these parameters have been applied is found in the chapter (5.2).

4.1.3.1 Game mechanics

**Board game artificial intelligence:** Usually, boardgames implement artificial intelligence (AI) to give the user the possibility to play in single mode. We decided against this since we needed a conversation between the players to take place for the game to function. Thus our game should only be only played by four, five or six players.

**Card driven game:** In this game mode, cards determine what happens within the game. Our the game implements this feature since its partly influenced by events occurring throughout the game in the form of action cards.

**Worker Placement:** Worker placement indicates that you use a symbolic representation across the map, and as such, this gives a player the control or special abilities over a specific region within the game.

**Area control:** The area control indicates that due to the actions in the game you end up controlling parts of the map that either benefit one player or limits other players.

4.2. Visual Research

To gain a broader understanding of how the nuclear warfare visual representations are visualized, I researched the following mediums: news, tv-shows, games, arts, magazines, websites.
4.2.2 1945-1998- Isao Hashimoto

This video project in the form of a time-lapse. Visualizes the world map and all (2053) nuclear explosions that took place during that period. Starting with the Manhattan Project Trinity test near Los Alamos, and finishing with Pakistan's nuclear test in May 1998.

Each nation testing nuclear weapons are marked with their flag and a counter, and in correspondence, to that, the flashes appear on the map to indicate where the nuclear test took place. (The nuclear culture sourcebook) When human history reflects on atomic weapons, we mostly remember the Hiroshima and Nagasaki bombings consequently, neglecting the thousands of nuclear tests conducted since then and their effect on the environment.

Fig 7. "1945-1998" (Isao Hashimoto, 1998 Source: The nuclear culture sourcebook)

Fig 8. Half-Life Calendar: Radium 226 (Erika Kabayashi, 2016 Source: The nuclear culture sourcebook)
4.2.3 Radiological Inheritance

Erika Kobayashi uses narrative strategies to make the materiality of radiation visible and felt. The materiality through manga drawings and novels that consisted of 1601 calendar posters, a number that represents the half-life of radium 226.

A double-sided poster is presented to the exhibition; one side maps the discovery of radium through the generations of the artists family. The other side provides a countdown of the half-life of radium from the date it was discovered until its half-life is reached in the year 3035. (The Nuclear culture sourcebook)

Both of these works were taken from the nuclear culture sourcebook. This book is an introduction to the nuclear culture, one of the most urgent themes within contemporary art and society. This publication brings together contemporary art and ideas investigating the nuclear Anthropocene.

These works set an example of how artists can deconstruct the issues of nuclear as warfare and waste. Hence, making it more approachable and comprehensible.

4.2.4 Illustrations by Marco Melgrati

The illustrations of Marco Melgrati, carry with them a visual language that sends an unmistakable message but at the same time leave room for the viewers own interpretation. The images of Melgrati inspired our card design and game changes such as using diplomats as the leading role of the players instead of representing country leaders as described in the same section.

Fig 9. Illustrations (Source: Instagram, Melgrati, 2017)
4.2.5 Mediatic representation

During the investigation of the mediatic representation, I identified that common use of the mushroom cloud often accompanied by missiles, planes and other means of deployment.

Missiles taking off are frequently added to the frame and often visualized as if they impact on famous landmarks. I additionally noticed that old footage of nuclear tests is recycled for these visuals, combined with powerful infographics on the missile reach and effects.

These visuals were spread across all the different fields even though the most significant producer was the news media industry. In the entertainment history, there is a visible heavy usage of visuals portraying dystopian wastelands, survival scenarios, and dystopian societies.

This research concludes that there is a massive usage from news reporting towards ballistic missiles and nuclear tests, presenting the image of the mushroom cloud across our whole investigation. For this project, I researched mediatic representation throughout the atomic age, starting with duck and cover (1950) all the way to images just days before this paper was finished (Russia24, April 2018).

For this I carried the analyze on English language organizations, as included but not limited to, were: Fox, Breitbart, CNN, Daily Mail, Aljazeera, Guardian, The Telegraph.

This research was purposely directed with the aim to better understand the context around the visuals and the output as a whole. For this, I critically analyzed the headline, article, and the visuals in context to the news outlet. I included media institutions across the whole spectrum, reaching from liberal to conservative views. During this investigation, there was a constant relationship between the visuals of the mushroom cloud and sensational headlines (i.e., Fig 11).

Fig 10. Breitbart article (Nazarian, 2018)
Often the thumbnail/preview of an article, on social media depicted the mushroom cloud, but once entered into the article this was replaced with less striking imagery.

The Merriam-Webster dictionary defines this behavior as “clickbait” something (such as a headline or image) designed to make readers want to click on a link especially when the link leads to the content of dubious value or interest. (Merriam-Webster)

‘Alternative' outlets as the Sun and Breitbart shows sensationalized headlines and visuals while news outlets that are regarded as more professional platforms use more moderate visuals. In (i.e., Fig 11) there can be noticed how outlets like The Guardian and Reuters, who are considered to be in the second more conservative category, a reoccurring pattern of the use of figureheads.

Fig 12. Aljazeera Infographic (Yarno Ritzen 2017)

The third category of visuals is the one designed to accompany articles, but also circulate in social media such as the following infographics showing the reach of the missiles of North Korea.

Here we can see that the image sources itself but also links to the institution's brand with their logos and the color profile of the typography. In the left bottom corner, there is the license that states its Creative Commons License. This brings professionalism to the way the news is portrayed and acts as a visual motivation to share and republish the infographic. The news articles collected and analyzed were also used in the first co-creational workshop to discuss along with the participants about their understanding of these visuals and later were used as a conceptual base for the Diplomatic cards(Semiotic cards).
4.2.5.1 Non-mass media visuals

Another example that uses striking visuals in the form of interactive infographics is the website outrider.org. Outrider is an organization striving to end the threat of nuclear war and reverse the course of global climate change. Outrider uses digital media to provide accessible information about how humanity can build a brighter future by working together. "Everything we do is designed to build deep understanding and to inspire action." (Outrider)

In their interactive infographic “what would happen if a nuclear bomb went off in your backyard” the user has the opportunity to nuke any location on earth and see the aftermath. As seen in (i.e., Fig 13) the infographic uses the same kind of visuals as seen before by the news outlets. It is arguable that this tool has an informing background but at the same time uses nuclear visual representations to draw attention.

Fig 13. Stills from the website (outrider.com 2017)

5. Design process

The following chapter will guide you through my design process, and show how we combined the theory and the method to conduct the co-creative workshops and generate a design solution.

The design implementation has been conducted together with Joey Pool, as a joined project. I was responsible for leading the game conceptualization and interaction design, and J. Pool was responsible for illustration and development of the game art. The game visualization process was a joint process where we both contributed to the ideation and visualization ideas.

5.1. Planning and preparation

The idea of creating a tool that would make use of semiotics quickly shifted to a board-game that could perform as a pedagogical tool. What started as a process of five workshops was altered to two workshops and one gameplay session. We faced a series of challenges in applying co-creativity which includes funds, time, a location and most importantly, it required a group of participants genuinely interested in the topic which would not scare away from its complex nature.

5.2. First prototype

Using the parameters mentioned at (4.1.3.1) in combination with the research on semiotics imagery and media visuals we created the first prototype to be used as a base for the first workshop.
5.2.1 Game concept

The initial concept of the game was a disarmament game where players would represent a country which possessed ten nuclear devices in their arsenal, and they would try to dispose of their nuclear weapons in the course of ten rounds.

The game featured a board where the players would move on just as in classical games like monopoly. The board featured 30 tiles. Six of those tiles represented country tiles (the users in the game). The remaining tiles where either Semiotic tiles, or Action tiles. The game featured one dice and six rocks that represented the location of the country, as well as semiotics cards and action cards. The game featured a wide variety of countries and three governing political systems (Democratic, Communist, and Totalitarian). The player started with ten Nukes, one million game-currency, and a 10,000,000 population. The game lasted fifteen rounds, and a mockup of the doomsday clock represented the countdown. The players moved in a circular motion through the map, and for every time everyone completed a circle, each player would get rid of one nuke, while the clock would move one minute closer to midnight.

Fig 14. (Top) First board game prototype

Fig 15. (Middle) Example of Semiotic card (Iron sky 2, 2018)

Fig 16. (Bottom) Example of a action cart for the first prototype (The Bulletin of Atomic Sciences 1947)

The action cards represented an event that hypothetically occurred in the game universe, setting an instant consequence on the player's fate. The semiotic cards where real-life visuals that were either taken from popular media, media, or games. Each player started the game with three semiotics cards. When landing on a semiotic tile the player would initiate the process of placing a semiotics card in the middle and thus the others tried to match it. After laying all the cards on the board, every player explains their standpoint and why they choose it, and the initial player who started the round selects one or more people who match his understanding of the card. The effect of this was not yet set as we wanted to observe the conversation and get input from the participants in the workshop.
5.3. First workshop
The first workshop was on the 24th of March 2018. Ten days before that we launched a campaign for recruiting potential participants. The target group was five to six young adults from 18-28 with both international and Swedish background. We used a prototype with all the game features mentioned above, and additionally, we produced a simplified diagram of Peircean semiotics (Fig 17) and the collected news and media articles for analyzing as presented in (4.2.5).

The agenda of the day went as follows.
12:00 Introducing the project
12:30 Discussion with the participants on their perception of the nuclear threat.
12:50 Playing session begins (Fig 18)
14:40 Feedback and End

The observations and feedback showed that the prototype did exceed the expected game-length thus did not finish and was had a slow game paste. The gameplay was repetitive and was not eventful enough. Semiotic interpretation did not add to the game besides generating short discussion. Currency and population were deemed useless and are to be removed from the prototype. The role-playing aspect of the game was good and generated large interest from the players.
5.4 Second prototype

With the gained feedback during the first workshop, we focused on developing the role-playing aspect, simplify the game motorists and further refine the design of the game.

5.4.1 Conceptual changes

In this version, the player is a diplomat that represents the country and travels to complete its countries agenda. We added the "hidden agendas" which is a secret mission card given to every player at the beginning of the game, and he/she is expected to complete the agenda before the game ends. At the start of the game each player also chooses one of the six playable countries, United States of America, United Kingdom, Russia, China, France and North Korea. The player's political affiliation (Democrat, Totalitarian and Communist) is a card drawn randomly also at the start of the game and decides who is its ally and who is its foe. Two of each political ideologies are available in the game.

Fig 19. Conceptual sketching for the second prototype

Fig 20. Conceptual framework for the new rules and map within the second prototype
5.4.2 Cards.
At the end of every round, there is a "Security Meeting," this is organized by drawing a semiotic card and all players interpreting it. The game features three different piles of action cards that relate to the political ideology of the role. For the semiotics, we illustrated the images to avoid using copyrighted materials that belonged to the news outlets. The action cards lost their imagery as they were distracting, and we choose a text-based card.

![High School Nuke](image)

High School Nuke
A high school accidentally developed a nuclear weapon in his parents' garden shed for his school's science fair. Your government took discreetly care of the situation, but did end up with an extra thermonuclear warhead.

Effect:
Add 1 nuke to your arsenal.

Fig 21. Action card from the second prototype

![Diplomatic card examples](image)

Fig 22. Diplomatic card examples

5.4.3 The board

![The second prototype](image)

Fig 23. (The second prototype)

In the second prototype, the board has moved to a circular form with two rows. The inner row is the movement tile, and the outside row represents ownership over the tile. Here you place the nukes to claim the territory and prevent the other players from landing.
here. We added embassies which can claim a tile for two players who share ownership but cannot prevent other players from traveling through the country. The background of the map features Autograph Map, created by Hajime Narukawa. The map concept was used as a base and was further aesthetically developed to suit our game and feature societal issues.

5.5. Second workshop

The second workshop was held on the 15th of April. This workshop was more casual similar to a gameplay evening. We aimed to analyze further and identify possible errors while playing the game.

![Fig 24. The second workshop](image)

5.5.1. Observations and Learning Outcomes

Identified issues:

Trying to control the board by gaining nukes and remove them at the end were conflicting aims, and made the users unsure how to act. The neutral tiles slowed the game down and made it less eventful. The Diplomacy cards were engaging, and there was a lot of discussion regarding the visuals, but the lack of limits to the effect it could have on other players represented an issue.

The hidden agenda cards presented a too broad goal that could not, and the participants were unsure what to do. The alliances imposed by the political affiliation slowed the game down and made it less dynamic, having the ability to switch sides makes the game unpredictable and more fun.

5.6. Semiotic workshop

On April the 18th we had the chance to present our project to a group of academics at the LNU Centre for Intermedial and Multimodal Studies. This workshop was facilitated by our external
tutor Letícia Vitral. We had the chance to present our second prototype and discuss its function and visual appearance.

5.6.1. Meeting External Tutor.

We executed another gameplay session with our external expert Letícia Vitral. She is a researcher within the field of semiotics and thus presented a great opportunity to receive feedback on our project. The playing session lasted around 1.5 hours. Even though we played the game in unfavorable conditions being just three players, we gained the following insights. Letícia Vitral encouraged us to try and streamline the Diplomacy cards, and the role plays aspect of the game. We concluded that we had too many embassies, some of the action cards did not affect sometimes, and that the Diplomacy cards needed to have a limited effect on the game. The semiotics cards should be limited to a set of rules or some predetermined sentences for the participants to use during the analysis of the diplomatic cards.

5.6.2 Learning outcomes and observations

With all the feedback received during both meeting and workshop, we applied the following changes. We disposed of the disarmament aim of the game as it was contradicting with the gameplay. We replaced this feature with more specific hidden agendas that need to be accomplished before the game is over to survive. The embassies now are dealt by the action cards as this way odd partnerships can be formed. This way the player can decide never to use a nuclear weapon to take over another country but instead just wait for action card with that particular action. This was important to us not to have nuclear weapons be the only way to play this game.

For this, the map outline was changed to act as individual countries instead of action tiles. These are linked to your political affiliation and are conflicting between the three different factions. The "Security Council" where the diplomacy cards are discussed will only support effects that affect the player negatively. It will act as an embargo of some sort for the actions committed in the game. This is limited to (Lose a nuclear device, move diplomat back home, and liberate a country that you occupy).
6. Design process

The outcome of this project is a critical board game that uses visual semiotics to generate a discussion around the nuclear warfare threat.

6.1. Game Description

In the roleplaying game Roll, Duck, & Cover, the players get introduced to the world of geopolitics and nuclear weapons. Each player represents a country as a diplomat. Each game starts with a countdown to nuclear war. Over several rounds, the player travels the board and interacts with other countries to complete their countries hidden agenda before the countdown reaches midnight. Along the way, you are affected by your choices, the choices of your government(Action cards) and the media effect(Diplomacy cards). To survive the game, you have to fulfill your hidden agenda before the countdown is over. This critical design game that aims to raise awareness about the current state of nuclear weapons the threat and how external factors fuel this race such as media, culture, and social media.

Fig 25. Final board game

6.2. Game Elements

6.2.1 The board
The game board has the size of A2 (420 x 594 mm) and folds down six times for better mobility and packaging. The game mechanics feature two rows of tiles that each have 24 tiles. The inner tile is what we call the movement tile, here you can find the starting point for each player that at the same time represents the home country indicated in different colors. This row is where the players move their diplomat figure and get the chance to land on either action tiles or neutral tiles. The second row represents territory and can be controlled using nuclear weapons or embassies. Due to the different form and shape of this map, it features a decentralized center of power, going away from the conventional way of placing Europe in the center. To help with the readability of the map we have place recognizable landmarks across the map to help maintain readability. In the background is what we call the mirrored reflection of our societal challenges. Even though this game deals with the nuclear warfare, we wanted to draw attention to other societal challenges that we face today. These issues might inspire further discussions and thoughts.

6.2.2 Personas (Countries)

The game features the following countries: United States, United Kingdom, France, Russia, China and North Korea. You choose these roles randomly at the beginning of the game and retain them through the whole length of the game. The country card acts as an identifying plaque that is placed in front of every player and is colored in blue.

Fig 26. Country card

6.2.3 Political profiles

The game features different political ideologies that influence your agenda and your action cards for the rest of the game. This card is randomly drawn after you draw the country card. The following ideologies are available in this game: democracy, communism, and totalitarian.

Fig 27. Political profile card

6.2.4 Hidden agendas
Hidden agendas represent your country's aim in the game, to survive the inevitable nuclear doomsday, you are required to complete your agenda before the clock strikes 00:00 (Midnight). You draw the card after drawing your political affiliation and keep it hidden. The card uses area control to create a goal, thus the card requires you to control one or multiple tiles on the map before the countdown is over. Hidden agendas are political ideology specific and as such might require you to: Restore the iron curtain, Expand the European Union, or conquer another country.

6.2.5. Game tiles
You use game tiles to mark your presence on the map as you play. They come in the form of Embassies, Nuclear weapons, and Fallout tiles. The nuclear tile lets you control the country you are in at the moment and for as long as it's placed there. Through action cards, you may unlock the placement of an embassy that represents shared control over the set nation. As you travel through the board you can place nuclear weapon tiles, in doing so you are taking control of those countries. Thus hindering other players from accessing them and counting as one vote during the "Security Council." If a nuclear weapon is deployed over a country both nuclear weapons are removed from the game, and a fallout tile will be placed, upon that country meaning that it is out of the game for one round.
6.2.6 Action cards

Every time you move on the board an action card is drawn. These cards have different effects that either apply instantly or might be saved for later use. The effect may be negative or positive depending on the card. Some of the effects include: receive a nuclear device, dispose of a nuclear device, move your representative to a certain location, etc. Action cards represent the actions and events in your home country or by your government.

6.2.7 Diplomacy Cards

After the end of a turn where everyone has played a special event in the game occurs called ‘Security Meeting.’ The person who has started the game at the beginning draws a semiotic card at the end of each round. These cards are based on the visual representation of nuclear warfare imagery as used by mass communication media. The players analyze the cards and discuss its meaning and context and end by voting to decide on the impact it will have on the game. The effects are: Remove a nuke from your arsenal, remove your troops from a country, move representative, etc. Each player receives one vote per country they control, and a majority is required to come to a decision. The effect can be applied to one country only.
6.2.8 Atomic countdown clock

The atomic countdown clock is the game indicator and is roughly based on a clock. It is set by
the players at the beginning of the game and acts as a countdown that can move back an forward
during the span of the game. The countdown clock moves forward one minute every time all
their players complete their turn, and a diplomacy card has been drawn.

Fig 32. Atomic doomsday clock

6.2.9 Game manual

The game comes with a game manual that is designed to help set up and start the game with and
start playing it including a description of our application on Peircean semiotics.

Fig 33. Game manual

6.3. Continuation

The game will be exhibited in Växjö Konsthall in May 2018 and will be played in a separate
venue ‘satellite’ that is not determined at the moment. The final stage of the game will be
making it available physically thought high-quality print, and accessible as a download from a website that would be created for that specific purpose.

7. Evaluation of contribution

The purpose of this game was to act as a critical game that serves as a learning platform to generate a discussion about the problem identified at the beginning of this paper. The problem area is defined as follows: the societal issue of nuclear warfare as represented by mass communication media purposely or not in a sensational manner. By engaging in this game, the participants can reflect upon their background, knowledge, and understanding of visuals depicting nuclear warfare visuals. This process aids the exchange of opinions in a face to face application, and consequently move the issue from the digital world to the realm of critical play.

We hope that people will leave this game able to understand better, the images as mentioned above that surround them, and have an understanding of basic semiotics so they can adapt that analyze on their daily life. To raise awareness on the usage of transgressive nuclear imagery, influence a critical reflection on the images the players are exposed to on a daily basis and begin a conversation around that. I believe that critical societies are likely to step away from the norm and pursue alternative ways which will create more sustainable and engaged societies. At this moment I state that this humble paper provides an introduction to the basics and a framework more exploration is needed to validate the extent of contribution. The outcomes that have been achieved by this project, at the narrow scope of their possibilities, in limited effect help to train more critical and more engaged and more sustainable citizens. We hope that our project and framework will inspire other change-makers to pursue emerging design landscapes and initiate grassroots change on societal issues by initiation a conversation and designing with society.

8. Conclusion

In the introduction of this report, I stated that I wanted to conduct this research to answer the questions that I mentioned at the time. I was curious to see how people see and react to visual reproductions of nuclear warfare, and whether we share the same thoughts. During my efforts in this project and my work with my project partner and society, we managed to bring together the application of Peircean Semiotics, in combination with co-creative workshops, to create the final design results that are the board game. Furthermore, I came to the understanding that it is very unlikely for everyone to perceive visual representations the same way since we comprehend images based on the knowledge we have. Therefore, the same picture can have a different meaning to every one of us. This diversity of thought, experience, and background makes the conversation around any issue more exciting and worth participating in. "Duck and cover" aims to ignite that excitement in each one of us. The enthusiasm to discuss, to criticize, to design, and to change the world.
Appendix
Photographic documentation of the “Roll, duck, & cover!” installation at the Växjö Konsthall for the Linnaeus University graduation exhibition. The images are taken by Fitim Selimi.
References


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