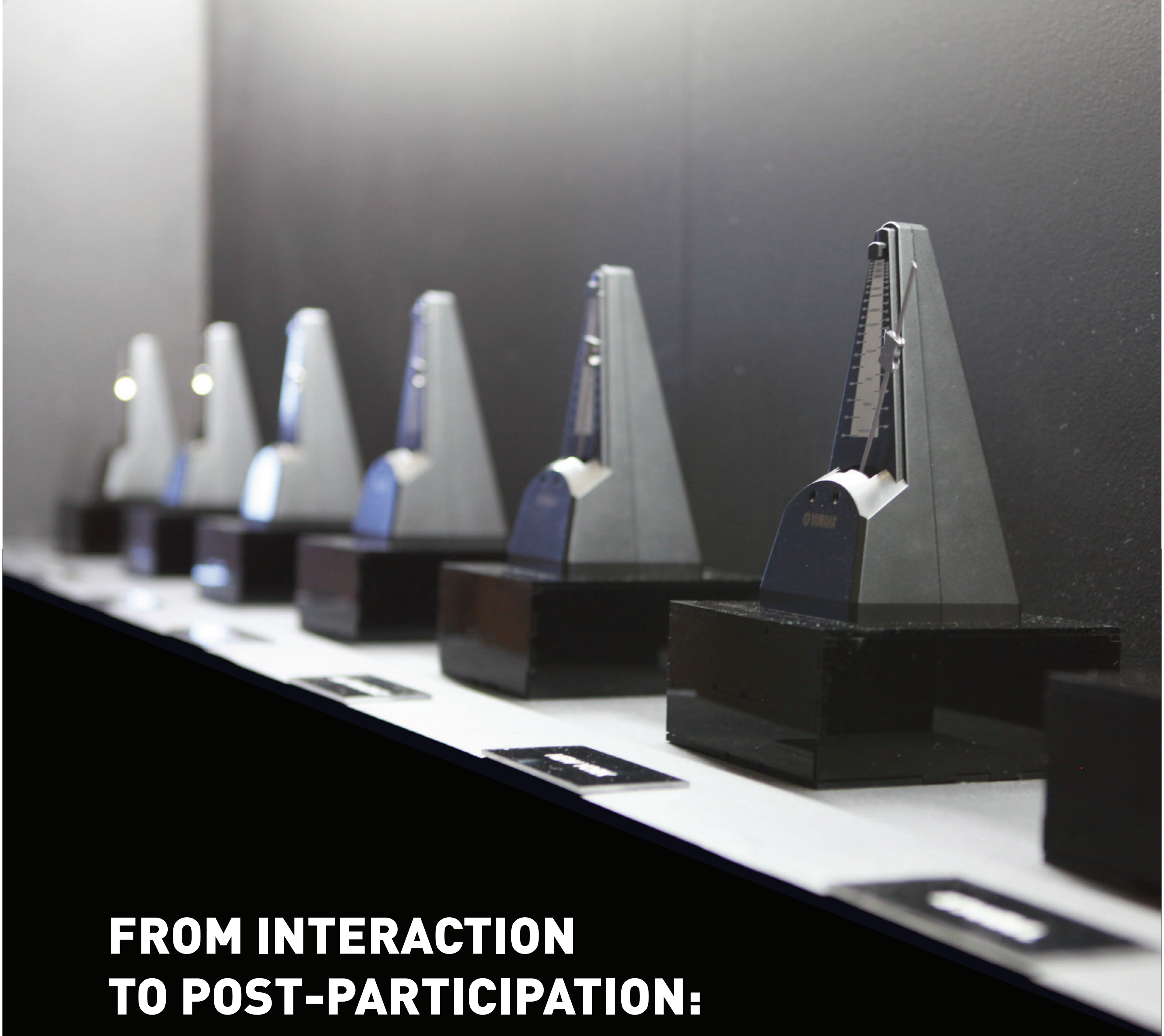

FROM INTERACTION TO POST-PARTICIPATION: THE DISAPPEARING ROLE OF ACTIVE PARTICIPANT

Varvara Guljajeva

Dissertationes Academiae Artium Estoniae 26

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Doctoral thesis
Estonian Academy of Arts, 2018

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ABSTRACT

This practice-based research explores the shift from active to passive participation in interactive art. By exploring interactive art history and the discourse of identity within the field, this dissertation investigates how artworks that demonstrate no audience involvement, but still incorporate an internal system interaction with a data source, are addressed. In other words, the research tracks down the interest shift from human-machine to system-to-system interaction, and explores the reasons behind this.

In order to approach the paradoxical situation in interactive art, where the artworks that demonstrate no direct audience interaction are addressed as interactive, the term of post-participation is introduced and discussed in this thesis. Hence, the notion of post-participation helps to describe, analyse and ultimately contextualise artistic practice from the perspective of audience involvement and the participative input of interactive systems. What is different from an interactive artwork is the position of the audience in regard to the work of art. This position is not active or responsive, like an interactive art piece would require, but rather, it is passive. In other words, a post-participative artwork marginalises the active role of a spectator. Post-participative art responds to a different source of input, which is real-time data generated by the everyday behaviour of humans or animals.

Post-participation is largely connected to the surveillance age. Today being passive is the norm, which is emphasised in the presented artworks by using

post-participation: a spectator participates without being aware of or having control over the participative act; instead, the focus lies in the interactive system, which applies post-participative input without the consent of an audience. In short, this thesis deals with the definition and contextualisation of post-participation as a concept, examines both its origins and a critical period of interactive art, compares participative, interactive and post-participative art, and finally, draws on the paradigms of surveillance age.

In this thesis, a differentiation is made between direct and indirect post-participation. Hence, the selected artworks are analysed from the perspective of concept, direct or indirect post-participation components, and realisation. In addition, related artworks by other artists are introduced and discussed under each subcategory of post-participation.

In the end, the dissertation contributes to the evolution of interactive art, by analysing and contextualising passive audience interaction in the form of post-participation. It argues that the concept of post-participation helps to address the shift from an active to a passive spectator in the complex age of dataveillance, an age in which humans are continuously tracked, traced, monitored and surveilled without our consent.

1. INTRODUCTION

I am a practicing artist and form an artist duo together with Mar Canet Sola. All the works that will be discussed in this thesis were produced collaboratively between Mar and myself. However, I have completed the research part independently. I am able to step aside from my work and see it through the eyes of a researcher. At the same time, my research interests, findings and contribution to the field are triggered by artistic practice. I feel that it is an essential relationship in the context of practice-based research because a significant amount of tacit knowledge is incorporated and exchanged.

My portfolio contains a number of interactive art installations that are open for audience input. For example, "SMILE" (2016) is a light installation that activates only when somebody smiles, while "The Highest Human Tower" (2014) invites the viewer to be part of a digital human tower. Hence, I have always been interested in audience interaction and participation in my artworks. However, since 2010 I have been questioning audience interaction through my practice, which has triggered an interest in exploring other forms of participation and interaction. Also, I felt that the ubiquity of interaction technology makes the audience less appreciative towards interactivity in art pieces, which requires that spectators are more interested in the concept of the artwork and less hungry for entertainment. There are several texts analysing interactive art exhibitions, for example, Edward Lucie-Smith (2012) writes about the DECODE exhibition highlighting a need for curatorial statement and critical concept. Hence, the audience is much more knowledgeable today and ask for more than just a technological wonder. As Ryszard W. Kluszcznski puts it: "Long gone are the times of fascination just with the phenomenon of digital interactivity itself." (Kluszcznski 2010: 27) It should not be misunderstood that since then I have stopped working with interaction as an artistic method. On the contrary, interactive artworks are part of my art practice, but always conceptually justified and critically evaluated against the technology used (see Appendix 1 for the practice timeline). The highly experienced interactive artists Christa Sommerer and Laurent Mignonneau summarised well the importance of the concept in an interview by Pau Waelder (2013): "... the main quality of an interactive artwork must be its concept. The technology should only be a means to achieve the realization of the artistic concept in the best way."

As an artist, I began to think about the new ways of participation that have introduced "the age of participation" (Scott 2005). According to Jose van Dijck (2014), "[w]ith the advent of Web 2.0 and its proliferating social network sites, many aspects of social life were coded that had never been quantified before – friendships, interests, casual conversations, information searches, expressions of tastes, emotional responses, and so on." To be more specific, I am interested in applying real-time data from social media platforms and sensory systems that we are unaware of or simply have no control over. I am referring to dataveillance, which describes the continuous surveillance of online (meta) data (van Dijck 2014). Being under constant control is a part of the post-digital age. The surveillance has gone further than a camera gaze; it is much more complex and diverse. Physical surveillance has been transformed into data tracking (Ozog 2010). Every step and click is traceable. The data is "collected passively without much effort or even awareness on the part of those being recorded" (Mayer-Schoenberger and Cukier 2013: 101). According to Jose van Dijck, the (meta)data of social media are increasingly used for predicting people's future behaviour (2014).

The industry driven datafication is described as surveillance capitalism, a term first described by the Harvard Business School Professor Shoshana Zuboff in 2015, and which underlines the ongoing and expanding monetisation of big data. In her words, this is a "new form of information capitalism [that] aims to predict and modify human behaviour as a means to produce revenue and market control" (Zuboff 2015). According to Valdan Joler from Share Lab in the interview to Ott Karulin, we have reached the age of surveillance economy where profit is earned by surveilling customers. Joler sees no reason why services on the internet, such as Facebook, have to be for free, as this represents the appearance of non-transparent business models for companies in this area. For instance, Facebook earns approximately eight dollars on surveilling each user's data (Karulin 2017). In the end, "[m]etadata and data have become a regular currency for citizens to pay for their communication services and security" (van Dijck 2014).

In short, the participation age enabled by Web 2.0 and other advanced technologies have their dark side, as they constantly use our data and metadata without our permission and even our awareness. Echoing Boris Groys (2013): "The internet is by its essence a machine of surveillance. [—] The internet registers every moment when a certain piece of data is clicked, liked, un-liked, transferred, or transformed." According to the PEW Research report "Digital Life in 2025", in the words of Zuboff (2015): "There is no putting the genie back in the bottle. [—] Everyone will expect to be tracked and monitored, since the advantages, in terms of convenience, safety, and services, will be so great … continuous monitoring will be the norm." Simply put, each like, move, click, search, message, export, import, forward, send, purchase, location and even more is monitored and used for various purposes.

Coming back to the research topic, my interest lies in the participation model that has been introduced by dataveillance and surveillance capitalism. I am talking about the phenomenon of the post-digital age: where the data collected from users or participants is used without their awareness or consent by various parties.[1] Since I am researching and doing artistic work with such real-time data participation in the domain of interactive art, I feel a strong need to define a specific term for it.

In order to describe and explore such an implicit way of participation, I propose the notion of post-participation as a mode of participation where the subject has no control or awareness of his/her involvement. In the context of this thesis, this term allows me to contextualise my work and address my main hypothesis: the system-to-system interaction that minimises the role of the audience and makes it passive, sometimes in an unconscious and even involuntary manner, has gained importance over the system-to-audience interaction, as exemplified in a series of artworks that I define as post-participative.

Erkki Huhtamo has named the internal system interaction as the opposite of user interaction. In his words: "It deliberately marginalises the active participation of the user, placing the machine and its operations in the centre." (Huhtamo 2007) To be more precise, in texts analysing David Rokeby's works, Huhtamo (2007) talks about an "unaware participant" and "passive

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1 I do not say owners because often we are not the owners of our data on the online platform that we use, such as Facebook, or a more complex ownership of data is involved.

interaction", while in the earlier texts he names David Rokeby's practice as "meta-interactive" (Huhtamo 1998). Furthermore, Ryszard W. Kluszczynski suggests eight different strategies for analysing interactive artworks and one of them is "Strategy of System", which frames the system interactive art pieces (2010). The proposition of various terms means that there is no clear understanding on how to address artworks that have shifted their focus from an active participant to a system. Moreover, it demonstrates a need to address and contextualise this special situation in the field of interactive art. Hence, for these reasons and the sake of artistic research, I propose and investigate within the framework of this thesis the term of post-participation, which helps to underpin this shift in the relationship between an artwork and the audience. Furthermore, I divide post-participation into direct and indirect, and describe selected artworks accordingly.

On first glance, one might confuse a post-participative or an artwork with an internal interactive system with a classical non-participative visual art piece, which is frozen in time after the creation process has finished. A post-participative installation follows the pace of life, and thus, changes in time regarding the post-participative input it uses. Hence, such artworks remain interactive in terms of system; only the input is altered. It is data generated by the audience or by other data sources in various ways. In the next chapter, I introduce a table that summarises crucial differences and similarities between participative, interactive and post-participative artworks in general.

When it comes to the difference between post-participation and interaction, as Erkki Huhtamo (2007) puts it: "The idea of interactive art is initially linked with touching." In other words, an artwork is activated or altered by pushing a button, moving in space, touching something, making a sound or some other physical activity. To be honest, this is a very spectator-centric understanding of interactive art and demonstrates its classical notion. Hence, for the sake of simplicity, for such interactive artworks that undergo Huhtamo's definition, the mode of interaction is named as direct, active and classical in this thesis. For example, "Videoplace" (1990) by Myron Krueger contains a direct interaction method because the artwork demonstrates an immediate response to the participant's motions. One is able to understand how an interactive dialogue between him/her and the installation is composed. On the other hand, as mentioned previously, "Listening Post" (2001) by Mark Hansen and Ben Rubin is not a classical interactive art piece because it does not offer a direct interaction to its audience. Moreover, the interaction system of "Listening Post" is internal and no way on how to influence or alter the artwork in the exhibition space is offered to the audience. Hence, the classical and direct interaction method in this thesis is understood as mapping the spectator's input linearly to the response of interactive artwork. In the case of this method, a spectator is able to perceive his/her influences over the installation appearance. In other words, the audience is aware of the fact that their actions are translated to the visual or aural outputs of the artwork.

The truth is that the development of technology in the information age is offering more opportunities for creation, presentation, participation and concept development in art. Thus, I see a tendency towards extended expressions in the field of interactive art. In the words of Claudia Gianetti (2004): "Contemporary art based on digital media and tools not only constantly questions its own status, but also queries the role of the artist, the position of the recipient in regard to the work of art, the function of the work, the function of the machine, and – very importantly – the relationship obtaining among artist, work, and recipient. … [T]he art triggers the continuous renewal and reformulation of these concepts and relationships."

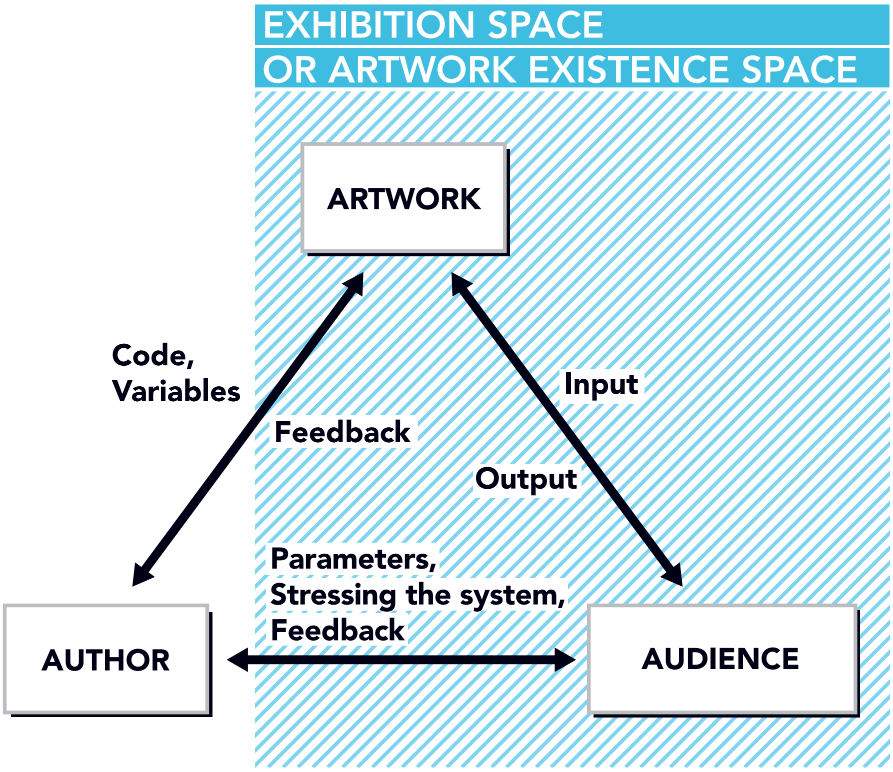

Figure 1: The triangle of an interactive artwork and relationships within it.

Generally speaking, an interactive art piece contains a triangle of relationships between the author, spectator and artwork (see Figure 1). The author creates the artwork and defines the context and boundaries of audience interaction via machine code. Moreover, the creative process is continuous because one needs to take into consideration various space parameters and observe audience interaction with the piece in order to get all the variables right. Hence, I have marked a two-directional arrow on the schema indicating this process in flux. From the perspective of the audience members, they are invited to complete, change and interact with the work. Therefore, the spectator is an input, while also an output for the artwork in the exhibition space, which is shared by the audience and the art installation (marked as a blue area in Figure 1). At this stage, the author loses control over the artwork and is not part of the exhibition space that is shared between the artwork and audience. In other words, an interactive work is open towards its audience, inviting it to take part and modify the work. In explaining the last relation in the triangle, the audience and its interaction with the artwork are the critical indicators for the author in the process of creating an interactive and responsive art installation. Although there is no direct contact between the artist and the audience, this connection can be seen as two-directional because both parties are providing feedback to each other. The author offers a new experience to his/her audience. At the same time, the spectator helps the artist to understand the territory for interaction. If I compare the author-audience with the artwork-audience relationship, the latter is a more obvious and permanent one. The former relationship is essential in the early stage of artwork development from the artist perspective. In short, with this figure, I aim to visualise the relationships within an interactive artwork.

It should be mentioned that early attempts to actively involve the audience originate from the beginning of the 20th century. For instance, back in 1913, the leading futurist Filippo Tommaso Marinetti stated in his manifesto of "The Variety Theatre" that the new theatre replaced audience passivity with active participation (Rainey 2005: 34–39). There are many examples from the exhibitions of this period where the audience was given a decisive role. For instance, in 1920 at Bauhaus Winter in Cologne Max Ernst placed an axe next to his works, allowing the audience members the freedom to destroy the ones they did not like. Similarly, in 1923 Man Ray left instructions next to the art piece saying "Object to Be Destroyed", which was a provocative message urging the audience to destroy the artwork. The art piece remained undistorted until 1957 (Umland and Sudhalter 2008: 231). Around the same period between 1913 and 1920 kinetic and op art origins emerged. In 1913, Marcel Duchamp produced his first kinetic and participative readymade "Bicycle Wheel". By spinning the wheel manually, a spectator was able to experience an optical effect of the work. In other words, he/she witnessed the illusional change via the motion (Weibel 2007).

However, a more conscious application of audience participation by the artists did not appear before the 1950s. Peter Weibel summarises the tendencies of that time as following: "In the analog art forms (op and kinetic art, Fluxus, happening) the intuitive use of the concept of the algorithm led to mechanical and manual practices of programming, procedural instructions, interactivity, and virtuality. In the "New Tendency" shows of the early 1960s in Zagreb, Milan, and elsewhere, viewer participation in the construction of a work of art played a considerable role." (Weibel 2007: 25) It is important to point out that after the introduction of interactive art, it is common sense to name artworks that use no digital technology as participative, and the ones that do, as interactive (Kwastek 2013).

In opposition to what is common in interactive artworks, a post-participative piece does not look for audience interaction. When it comes to post-participation, the author-audience-artwork triangle seems different and more complex (see Figure 2). To be more specific, the figure below contains an additional component: a post-participative input, which can originate from a human or animal activity. The critical fact is that participation does not happen on purpose; it is not an active one. Thus, the primary triangle of relationships is formed by the author, post-participative input and the artwork. The only two-directional connection is between the author and the artwork, which follows the same logic as in the triangle of interactive artwork. The post-participative input has a passive role, while also acting as an input for the artwork. The input is selected and monitored by the artist, who defines the territory of the internal interactive system of the artwork. The post-participative input cannot be replaced in this triangle with simple data because it has conceptual value; thus, we cannot look at such works only as data visualisation. Moreover, data visualisation is a scientific and information design related term that is not appropriate in describing an art practice, in my opinion.

In short, the emphasis is not on the data but rather on the participative data source, which is selected and monitored by the artist.

When it comes to the audience, it has a one-directional connection with the artwork, which is a contemplative reception. In other words, the spectators perceive the output of an internal interactive system of the artwork, which is real-time responsive to the post-participative input. In the case of direct post-participation, a beholder is able to act as input without an intention. Concerning indirect post-participation, this option is disabled, and only artwork and audience meet in the exhibition space (marked as a blue area in Figure 2). This means that the post-participation process happens outside of the space. In other words, the post-participative artwork does not offer any direct interaction to its audience.

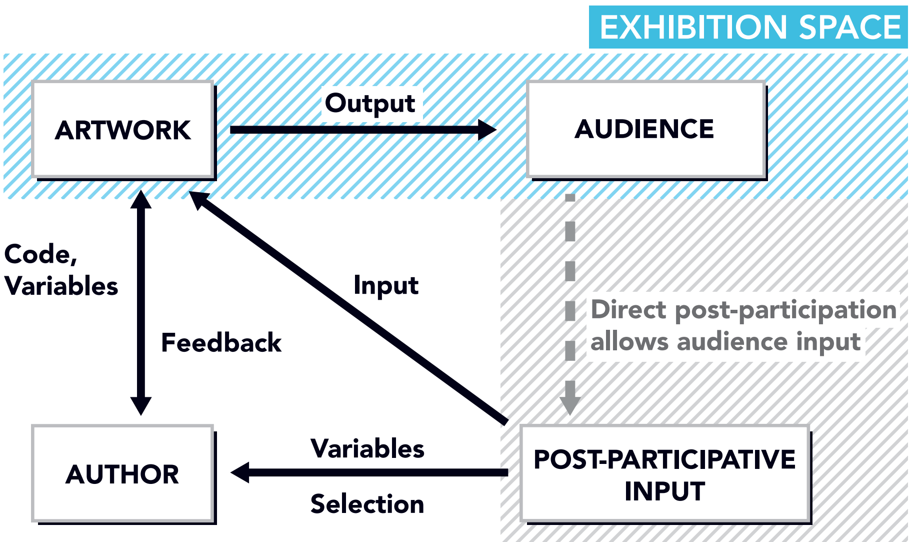

Figure 2: The relationships within a post-participative artwork.

Furthermore, my research aims are to tackle and understand quite a narrow form of participation element in an artwork. The question here would be whether we no longer notice interaction processes in the post-digital age. It might be true at a certain point that interaction with a technological medium has become so natural that our interaction behaviour is a part of routine actions that we perform almost unconsciously. However, my research interest is not about direct interaction. I am looking at the participation element. Hence, I feel that the notion of post-interaction would be inappropriate. In this case, the term post-participation seems more suitable, since it helps me to describe the participation element within an interactive system that does not facilitate direct audience interaction.

To summarise, in the thesis I understand post-participation to be a type of engagement that occurs in real-time without the control of a beholder or data generator. Post-participation underlines the fact that we have no power over participation and the usage of our data in many aspects. In other words, social media data and metadata can be used in various activities including an artwork without the owners and/or producers of these data being aware of it. And it is precisely this point that interests me as an artist, and I explore this in several of my artworks presented in the dissertation.

In addition, I divide post-participation into two categories: direct and indirect. Simply put, an artwork of the first type shares space and time with its post-participative input, and the second one does not. Hence, the artistic practice discussed in the thesis is presented according to these post-participation categories. The terms are described in detail in the next chapter.

The proposed term of post-participation in relation to my artistic practice can be contextualised within other forms of participation that differ from direct interaction and have already been explored by a number of artists and researchers. For example, James Coupe's work is mostly about surveillance, along with the act of observing and being observed. Hence, he talks about "willing" and "unwilling actors" inside the surveillance narratives created by the artists (Coupe 2013). Furthermore, Manuela Naveau in her doctoral thesis defines four categories of audience participation in the internet art projects. The categories are aware and unaware (*wissentlich/nicht wissentlich*), and on the other hand, voluntary and involuntary (*freiwillig/unfreiwillig*) participation (Naveau 2017: 252). She analyses several artworks that involve online participation, like "Face to Facebook" (2011) by Paolo Cirio and Alessandro Ludovico, and "[V]ote-auction" (2000–2006) by Übermorgen, by applying the combination of these categories in order to describe the art projects. As mentioned above, Huhtamo (2007) also suggests several terms, such as "passive interaction", "meta-interaction" and "unaware participant" in his article, and Kluszczynski (2010) also proposes "Strategy of System". Finally, there is Pau Waelder's research on interactive art from 2008, where he uses the term "subliminal interaction" in referring to artworks that are difficult to describe as interactive art pieces since they are missing the direct interaction feedback between artwork and viewer. As an example, Waelder introduces "eBay Landscape" (2004) by Carlo Zanni. The artwork changes its landscape components based on several data inputs, such as CNN's website, eBay.com's price on the stock market, and visitor numbers and their IP addresses on the project website. Carlo Zanni (2004) describes the interaction aspect in his work as follows: "In this piece there isn't click interaction but what I call OFF-KEYBOARD interaction that comes from our private and social behaviours that, once transformed into texts, images or statistics, influence and determine the content and the shape of the work."

In conclusion, there are a number of ways in which artists and researchers have intended to describe participation and interaction within an artwork that is not controlled and/or voluntary by the audience. All of the definitions have specific frameworks and/or are very content specific. Therefore, I decided to use the term post-participation in this thesis to describe the work I do and frame my research thinking in the most precise and appropriate way.

1.1 Motivation and Research Questions

The observation of my own practice had led me to explore the paradoxical condition of those artworks that tend to be considered interactive yet do not establish a dialogue exchange with the spectator. In other words, I saw a shift from an active participant to a passive one, which triggered interest towards investigating the relationships within the interactive system of an artwork, the origin and intention of input, and the role of the audience. The same paradox can be observed in the "societies of control" (Delueze 2007) – the Web is supposed to be participative and interactive, but in reality, users are treated as "passive sheep" (Zuboff 2014) by big internet corporations. Hence, apart from contextualising passive audience within an interactive system, post-participation enables me as an artist to tackle the complex issue of surveillance and dataveillance in the post-digital age, too.

I believe that participation in art today can be more complicated, diverse and critical than an audience being creative, touching and activating, or using artwork for a novel way of communication. The fact is that the world is becoming gradually more complex. The rapid development of technology offers us new possibilities but also introduces us to a higher level of complexity. Hence, my aim is to make use of modern technology in order to explore new ways for expression and forms in contemporary art and to reflect upon the networked age.

The fact that the ubiquity of interaction technology makes the audience more critical towards interactivity in art pieces should not be overlooked, as this means that spectators are more concept aware and less hungry for entertainment. And artists have an even more critical stance towards technology, in my view. For example, my practice timeline in Appendix 1 illustrates how interactive, post-participative and other artworks are interconnected in time. There are no vast gaps between creating interactive art pieces, for example. Each year I have produced one or more such artworks, while also creating other forms. The connections and relationships between particular artworks and the post-participation category represented as dotted lines are discussed in Chapters 3.4 and 4.4 ("Related Artworks and Discussion"). Hence, the timeline demonstrates a dialogue between me, my artistic practice and the audience, in which I move between passive and active audience participation exploring the borders and roles. In the end, with the practice timeline, my intention is to contextualise my artistic practice and show that I have a considerable body of work and experience for introducing a new term such as post-participation in order to describe specific category of artworks in the best way.

In my artistic practice, I began exploring beyond direct audience interaction. After failing to classify some of my artworks, such as "The Rhythm of City" for example, I had a closer look at what is happening between the artwork and the audience, and who or what is completing the art piece. Since some of my artworks needed human or even animal input, it was not an interactive or kinetic installation, nor a sculpture. On the other hand, there was no direct input from the audience but rather general post-participation in the artwork from the audience or people. Thus, my research revolves around stretching the boundaries of interactive art and understanding the nature of participation and interaction.

I am not comfortable classifying as interactive artworks those works that have no direct interactivity element because it is confusing and does not help to develop the field further. Hence, in my practice-based dissertation I am looking at the practice that has gone beyond audience interaction, and thus, try to describe a new element of participation as post-participation in open work.

The situation of not knowing how to describe the participation element of my artworks urged me to scrutinise the whole process of interaction and understand the role of the audience. Hence, through the research process, I aim to contextualise the artistic practice and understand it at a deeper level.

The dissertation is composed by applying following research questions:

- What is post-participation?

- Why do I apply post-participation to some of my artworks?

- How does an interactive artwork differ from a post-participative one?

- Why is post-participation relevant in the context of (interactive) art?

- How have audience participation and interaction evolved in my practice?

The research questions represent my intention to understand the participative element within an artwork and its interactive system. Also, the aim is to differentiate between interaction and post-participation, and thus, contextualise post-participation in the context of interactive art and contemporary art in general. By analysing my own and related artworks, I intend to explain direct and indirect post-participation in detail.

The first research question reflects the research process of understanding how to address passive and unaware audience participation. For me as a researcher and also an artist, it was a long process to decide on the most appropriate and descriptive terminology. Apart from an existing proposition for indirectly interactive artworks that I have already presented in the introduction, I have been testing various terms. Moreover, the evolution of understanding how to describe my practice from the perspective of a participative input is a research process for me. First, I considered applying the term "unaware participation" in approaching the shift of an active participant to a passive one. I also considered "extended interaction" and "post-interaction". After rejecting the three previous examples, I decided to stay with the term "post-participation", because the notion is the most related to and valuable for the artworks that are presented and discussed in the practical part of the dissertation.

1.2 Research Methodology

There are many theories and opinions concerning what artistic practice-based research should be. After considering several studies, I found the most appropriate to be the ideas of Hannula, Suoranta and Vaden (2014) as summarised in their book *Artistic Research Methodology*. The researchers underline the importance of contextualising the practice and avoiding acting in a vacuum. I connected with the term of "research inside-in" that the authors suggest. It means observing one's own practice and looking through the lens of it at related practices, theories and influencers, and then again turning back into the practice.

Hannula, Suoranta and Vaden (2014) also stress that the context and framework of practice-based research are essential. Feyerabend's anything goes could be misleading at this point. The idea behind the statement is that there is no limitation at the beginning until one finds the structure and anchor in the research process. To be more precise, "[c]riteria for the acts of the practice stem from the practice itself in connection to its histories and present articulations. Again, the practice here is not interpreted as a cleaned-up or closed-up box but as an open-ended, internally conflictual enterprise that is always anchored within its structures." (Hannula et al. 2014: 4)

The cycle of research inside-in was applied continuously during my artistic research period. In other words, being able to "be both readers and writers, the ones who talk and the ones who listen, the ones who do and who are there to relate to and discuss what others in the same and similar practices are doing" (Hannula et al. 2014: 4). By introducing other ideas in research methodology, according to Lynda Candy (2006), the research that is carried out by creative practitioners is classified as "practice-based" or "practice-led". A practice-based study can be seen as bottom-up because new knowledge is gained from the practice itself. The research cannot be understood without seeing or experiencing the practice. On the other hand, in practice-led research, the practice has a vital role. However, it is seen simply as a research method. Practice-led research can be adequately explained in the textual form. There is no need to witness the practical part (Candy 2006).

Besides Candy's input, there are many other academic discussions on proper research methodology and terminology for the creative fields of art, design and architecture. For instance, artistic research could also be applied in describing this kind of academic work. I believe that it is essential to be aware of different theories in order to decide on the best methodology or combination of many.

In addition, according to Morwenna Griffiths also being aware of the role of self in research is crucial. To be more specific, Griffiths talks about "arts-based, practice-based research", which stands for "research that depends methodologically on practice in the arts" (Griffiths 2011). She stresses the component of self that contains every research, especially arts-based, practice-based research. In her words "research cannot be impersonal"; it is a unique voice (Griffiths 2011). This fact is not negative as long as once acknowledges it, according to Griffiths. She continues: "…understanding of the self and its place in research is crucial in the carrying out and presentation of arts-based, practice-based research. In arts-based, practice-based research the self is inescapable, because the person creating, responding to, working on, developing or evaluating performances, artefacts and practices is central to those activities." (Griffiths 2011) According to the ideas of Griffiths, throughout my research process I have intended to be self-conscious and notice how the self and practice have influenced the research work and even vice versa. In other words, I have tried to embed the self into the research instead of erasing it. I believe my research, practice and myself should be looked at as an interaction process influencing each other. In the previous subchapter, I aimed to position and explain the role of the self in the research process.

In conclusion, taking into consideration different inputs on research methodology, I see myself as a researcher, who looks at the topic through the lens of an artist in practice and conducts bottom-up research, or more precisely, research-inside in. If I were not an artist, I would not be a researcher. In other words, the research would not exist without the practice. Thus, in my current PhD work, as an artist and practitioner, I have decided to apply practice-based research methodology that allows me to reflect on the interactive and participative processes.

1.3 Structure of the Dissertation

It is a practice-based doctoral thesis, which ensures that the emphasis is on the artistic work. The art practice is motivation for the research and also an integral part of it.

Before defining the post-participation component in the artworks that contain an internal interactive system, I examine the historical background and definition of the interactive art and place the art field in the contemporary art territory. Prix Ars Electronica is applied as a reference point for discovering the establishing moment of interactive art, and it is also used for understanding the critical events in the history of the field that referred to the emergence of the extended forms of interactive art and even the crisis of the domain. Ultimately, the aim is to contextualise the term of post-participation and explain the reason for applying it in artistic research.

In addition, by comparing audience participation, interaction and post-participation it is intended to determine and clarify similarities and differences between these three methods for audience involvement in an artwork. Hence, Table 1 presented in Chapter 2.4, "From Interaction to Post-Participation", has crucial importance for building up the discussion about the meeting and departure points between these fields. Hence, the first chapter is dedicated to contextualise post-participation in the context of interactive art, to explain the differences between participation, interaction and post-participation, to understand the shift from an active participant to a passive one, and finally, to introduce the term "post-participation" and its subcategories: direct and indirect post-participation. In addition, a political aspect of the topic is also presented by explaining the issues of surveillance and dataveillance, which have become an integral part of everyday life.

Chapter 2 prepares the ground for discussing the artistic practice that illustrates post-participation as well as related artworks by other artists. As mentioned previously, through the research process I have discovered a need to divide post-participation into two categories: direct and indirect. Accordingly, Chapter 3 is dedicated to the artworks that can be described as indirect post-participative, and Chapter 4 explores direct post-participation from the art practice point of view. Both sections have an identical structure. I have selected three indirect and three direct post-participative artworks of mine, which are described in terms of concept and realisation. In addition, I discuss the indirect or direct post-participation component of each selected art project and underline new experiences and knowledge gained from the artistic and research processes. The chapters are concluded with the related artworks and discussion. My aim is to explore similar approaches by other artists and see how my thinking regarding passive audience participation resonates in someone else's work. In addition, I have made a practice timeline (see Appendix 1), which, apart from visualising my whole practice through the years, helps to see works related to post-participation and understand where I am coming from as an artist.

In regard to the conclusions that summarise the thesis, I have based these on the research questions that were asked at the beginning. Hence, the conclusions look back on the work completed, emphasise the findings and new experience gained, and elaborate on the future plans.

2. CONTEXTUALISING POST-PARTICIPATION

This chapter aims to contextualise the notion of post-participation, which is introduced in this thesis in order to describe and analyse artistic practice from the perspective of audience involvement and the participative input of the interactive system. However, before going into the details of post-participation, I draw attention to the crisis of interactive art: how from the technological wonder of the audience completing a computer-based art installation, we have reached a time that is represented by a critical discourse towards participants' engagement and technology in general. Before doing so, I place interactive art in the context of art history and briefly introduce a few pioneers of interactive art.

2.1 Situating Interactive Art

When it comes to the roots of interactive art in the context of art history, there are different and even contradictory views on its origins. Due to the complexity and nonlinearity of interactive art history, Ryszard W. Kluszczynski (2013) suggests viewing the development of the field as "rhizomatic archipelago". "The history of interactive art mirrors its characteristic features in a very intriguing way: nonlinear construction, fluidity, transformation in many planes and directions, open architecture, and the multitude of perspectives, occurring in configurations that are always individualized." (Kluszczynski 2013: 65) In short, he sees the input of five art domains as a basis for the emergence of interactive art. This means it is difficult to identify one or two art genres as the predecessors of interactive art. These five, which are kinetic art, the art of action, installation art, the art of electronic media and conceptual art, introduce "certain hybrid, transdisciplinary, and transmedia characteristics" to the field (Kluszczynski 2013: 66).

On the other hand, we can also identify art movements such as Dada, Fluxus, Happenings, Cybernetic art, kinetic art, op art and closed-circuit installations, which introduced the ideas of audience participation, art as a process and immateriality of an artwork. "The notions and concepts of interaction, participation, and communication are central to twentieth-century art, and in equal measure concern the work, recipient, and artist. Generally speaking, these terms involve a movement from the closed to the 'open' work of art, from the static object to the dynamic process, from contemplative reception to active participation." (Arns 2004)

It is also important to note the appearance of instructions as a method for guiding audience participation. Many Fluxus and Neo-Dada artists treated instructions as a score and gave a specific decisive role to the audience or performer(s). As Peter Weibel puts: "In works associated with Fluxus, happening, or performance, the object of painting or sculpture was entirely replaced by instructions to act." (Weibel 2007: 25) When technology-mediated participation was introduced, artists started to communicate instructions or scores via technological systems. Similarly to Dadaism and Fluxus, interactive art shares the same values regarding bringing art closer to the average person and not solely keeping it to an expert audience.

Weibel values the most kinetic and op art influences in the path of the interactive art establishment. The illusion was named as virtual, which is a ground-breaking idea for the first part of the 20th century that still resonates with the ideas of media art today. Kinetic and op art have a vital role in the further development of interactive art, since they have addressed spectator as an active element, and introduced paradigms such as virtuality and virtual environment. "Everything that would later characterise computer art and the interactive virtual environment was there already, albeit in purely analog or mechanical form." (Weibel 2007: 38) Also, Katja Kwastek emphasises the relevance of kinetic art in the context of interactive art development by pointing out the following: "Unlike happenings and action art, which involve the participation of the artists, kinetic art offers opportunities for action that can be realized in the absence of the artist." (Kwastek 2013: 23)

Marcel Duchamp is considered a key twentieth-century figure of avant-garde, whose ideas continue to echo in artistic practices and theories. Duchamp's work is remarkable in many aspects, and he served as an example and inspiration source for a number of artists, especially in the 1960s when computer technology appeared. In addition to allowing a spectator to be creative and being a part of an artwork, Duchamp also gave a role to a machine, such as his "Rotorelief". Nevertheless, Duchamp did not consider himself to be a progenitor of "art and technology". However, he saw the importance in the additional value of beholder in the creative act (Edmonds 2010). Apart from Duchamp, there are many other artists who played a crucial role in expanding existing art forms, and mixing it with other disciplines and genres, such as John Cage, Robert Rauschenberg, Merce Cunningham, Nam June Paik and more.

The use of technology as a mediator between the author and spectators was introduced from the 1950s onwards. Also, the connection between interactive art became clearer. Moreover, a number of works emerged that could be classified as interactive. For example, Nicolas Schöffer's cybernetic sculpture "CYSP 1" (cybernetic-spatiodynamic) from 1954, the movement of which reacts to sound and light intensity. "CYSP 1 shows a causal connection between stimulation and reaction. Thus a personality, a sort of being, is attributed to the sculpture." (Dinkla 1996: 283)

According to Söke Dinkla, participatory, reactive kinetic, cyborg and closed-circuit art have much more in common with interactive art than with Happenings. Dinkla states that the difference comes in regard to the author's role: in Happenings, an artist uses the audience as material, whereas in the works of interactive art the system is open for discovering and the author trades his/her freedom to spectators and to the machine (Dinkla 1996). I would not be so radical about Happenings. In the end, a number of interactive art installations are very much instructive, and artists prefer the audience to follow the interaction script rather than explore and disconfigure the installation. As Masaki Fujihata mentioned in an interview conducted by me, each interactive system has its limitations, and an artist does not want that a spectator goes out of these borders due to an aesthetic reason (Guljajeva 2017).

To sum up, I find the ideas of Kluszczynski valuable, as he sees the roots of interactive art history as a "rhizomatic archipelago", which reaches out to the several branches of art domains. It means various forerunners of interactive art offered different inputs to the development of the field. I have doubts in agreeing with all the proposed related genres, but it is important to note a number of interests and innovations, which played a vital role in interactive art history. First, the idea of involving the audience in the creative process. Second, the transformation and reaction of an artwork. Third, the immateriality of an art piece. Furthermore, the appliance of electronic and digital technology. And finally, the exploration of immersive and reactive environments. Hence, many tendencies and ideas of the avant-garde have contributed to the establishment of the interactive art field.

2.2 Defining Interactive Art

When looking at interactive art, as explained in the introduction, there is a common triangular relationship between the author, spectator and artwork. This means that an interactive artwork is open for the audience to interact with to a certain extent, as defined by an artist. A computer system mediates interactive artworks. However, some would argue about this fact and state that interaction can also take place between people, the beholder and an object, or be simply contemplation of an artwork. This versatile understanding is caused by the application of the term in a number of different disciplines, such as psychology, but also human-computer interaction (HCI). The latter is a heavy influencer in the field of interactive art regarding audience interaction mediated by technology (Kwastek 2008). Ernest Edmonds (2010) offers a good comparison between the importance of HCI in interactive art making and the colours of paint in painting, which expresses the interconnectivity of the fields. Moreover, he states that in such an art form the principal aesthetic value lays on the interactive experience. Hence, engagement solely at a mental level is not enough in the case of interactive art.

On the other hand, according to Norwich, perception is an active process. It means if one looks at a painting, his/her brain is actively engaged. However, the beholder does not introduce any alternations to this artwork. Thus, Edmonds takes this fact as a criterion for an interactive piece: an interactive artwork has to respond to audience interaction with it (Edmonds 2010). Also, Kwastek makes a similar point regarding the level of engagement, when defining the discipline: “Digital artworks that require the viewer to engage in some activity that goes beyond purely mental reception are commonly designated as ‘interactive art’.” (Kwastek 2013: 4) Söke Dinkla is more medium-specific in her understanding of the art form and defines it as following: “The term ‘interactive art’ serves as a category-specific designation for computer-supported works in which an interaction takes place between digital computer systems and users.” (Dinkla 1997: 8)

To add one more perspective, in the understanding of Frank Popper, interactivity constitutes active participation. To be more specific, according to Popper an artwork that involves a man-machine relation is an interactive one, and it is incomplete if there is no participation by the audience. On the other hand, only mental engagement within interactive art is impossible, since without physical participation one cannot perceive an artwork according to Popper (1993).

When it comes to participative art, mediation by technology is not necessary, and the art form’s main aim is to welcome the intervention and involvement of the audience and interhuman interaction. Nicolas Bourriaud describes such art projects as relational art and emphasises the emergence of a new intersubjective relationship that is mediated by the artwork. Bourriaud talks about relational encounters as a form of participation (Bourriaud 2002). In his words: “Art is a state of encounter.” (Bourriaud 2002: 18) The author speaks about the value of art to society through its generation of encounters and stimulation of communication. Apparently, he refers to the social forms of participatory art. However, he does not make a strict differentiation between interaction and participation, as Claire Bishop does. What is more interesting, Bourriaud states that the artistic activity is a game. It is worth mentioning that for Bourriaud, interactivity also covers interhuman interaction and thus the playful relationship between people, not necessarily the machine-human relation. At the same time, he speaks about interaction with an artwork that is different from communication and interhuman interaction. For example, Gonzalez-Torres's work, which is a vast pile of candies, changes its form slowly and in the end might entirely disappear by people taking away the sweets. In analysing the same artwork with the ideas of Bishop, this kind of art piece is an interactive one, because it only has a spectator-work relationship and no social form at all.

Coming back to the encounters, in my view Bourriaud's theory is very similar to Guy Debord's construction of situations. Only Situationist International was far more political and active in the urban space than Nicolas Bourriaud. What is more, the relational encounters cannot be seen as encounters if the work of art is presented in the space of a museum or gallery. Therefore, the statements of Guy Debord make more sense for me than those of Nicola Bourriaud. Bourriaud illustrates his ideas with examples such as Rirkrit Tiravanija's seminal soup kitchens (1992–), which blur the boundaries between the formal environment of a gallery or museum and the casual social interaction in the kitchen. Hence, the artwork celebrates the lived experience and not the material objects. An open process is also characteristic of these kinds of artworks.

To be honest, the examples on which the whole of *Relational Aesthetics* are based do not fall under the definition of participatory art, in my view. To elaborate, Bourriaud mixes all possible ambiguous terms to avoid defining the borders of this relational sphere that he talks about in his texts. Bourriaud defines the sphere of interhuman relations as follows: "…their works involve methods of social exchange, interactivity with the viewer within the aesthetic experience being offered to him/her, and the various communication processes, in their tangible dimension as tools serving to link individuals and human groups together." (Bourriaud 2002: 43) The so-called tangible dimension is similar to the ideas of Lygia Clark and Helio Oiticica (1968), who saw objects only as propositions for participation. Similarly to Bishop, Bourriaud points out the non-hierarchical nature of participative works. He allows all kind of engagements: from passive to the audience becoming a co-author. However, the role of a participant is often not as visible as in the case of interactive work. Thus, the radical difference between a participatory and interactive work is the complexity and key role of "interactor" in activating and altering the work (Gianetti 2004).

In introducing the ideas of Claire Bishop (2006), in her book *Participation* she looks at participation from the perspective of social dimension that takes place between the spectators. The author defines the works involving human-installation communication as interactive artworks alone. Hence, this kind of artistic practice is not covered in the book. Moreover, the social dimension that Bishop talks about emphasises collaboration and the collective dimension of social experience. Bishop's statement can be well-supported by the works and writings of Lygia Clark and Helio Oiticica.

In regard to the motivations for participatory art, Bishop highlights three main factors: activation, authorship and community. The first refers to the wished relationship between the experience of a work of art and individual/collective agency. The second motivator is about an artist giving away control over artwork and empowering audience. There's an analogy between Clark's and Oiticica's expression of spectator-author and previously mentioned collaborative creativity. The aim is to achieve a non-hierarchical social model. And the last concern is about community crisis. Industrialisation and urbanisation, especially in capitalist societies, introduced the lack of communication and individualism. The same tendencies are also mirrored in the literature of the

1900s through the passer-by motives in novels. The statements of Guy Debord (1957) have a much stronger connection, concerning community crisis, to the critique of capitalism in arguing that participation has become staged. His most famous work is *The Society of the Spectacle* (1967), which criticises our staged and fake society. Guy Debord talks about the passivity and non-communication of community, and therefore, he aims to bring activity to the public by constructing situations. The main aims of constructed situations were to stimulate the appearance of new social relationships, and in turn, realities.

To sum up briefly the ideas of Bishop, it seems that she looks at participation from the perspective of socialisation and audience empowerment. She has a clear understanding of the meaning of participation and distinguishes it from interaction. In her view, participation constitutes the social form of audience engagement, and interactivity solely involves a human-installation relationship.

However, the ideas of Bourriaud and Bishop regarding the terminology of participation and interaction cannot be taken as a basis for differentiating between a participative and interactive artwork. Christian Paul (2011) effectively highlights this and refers to this situation as "Relational Aesthetics Syndrome". Although Nicolas Bourriaud and Claire Bishop apply very similar terminology as interactive art – such as interactive, participative and user-friendly – they are entirely ignorant of new media and interactive art (Paul 2011). For example, when Claire Bishop talks about the interaction between human-installation, she is not considering an interactive artwork. The interaction can be picking up candy, making a sandwich or the immersive experience of body tracking. Neither of the two authors of the most famous books on participatory art even mentions any early interactive artwork. Bourriaud mostly bases her discourse on the same artists' selections, while Bishop references famous names from the 1950s and 1960s, such as Helio Oiticica, Lygia Clark and Joseph Beuys, among others.

Paul argues that our society is shaped and entirely immersed in digital culture and technology. However, art institutions continue to ignore the forms of art that apply technology and "they still emphasise exhibiting more traditional art forms that reference technological culture rather than art that uses these technologies as a medium" (Paul 2011). Instead, the paradigms of the post-digital age are tackled by superficial concepts that "lack deep understanding" of the topic (Shanken 2011). Bishop (2012) herself points out the same issues a year later in her article "The Digital Divide: Contemporary Art and New Media", in which she discusses little confrontation of the digital age through digital media by mainstream contemporary artists. Furthermore, the term "relational aesthetics" is also connected to the sector of technology apart from interhuman relationships. In the words of Christiane Paul: "One could argue that the term 'relational aesthetics' itself – in its reference to the relational database, which was formalised in the 1960s and has become a defining cultural form is deeply rooted in digital technologies. Bourriaud strives to find new approaches to open-ended, participatory art that avoid 'to take shelter behind Sixties art history' (Bourriaud 2002: 7)." (Paul 2011) Ultimately, as Edward Shanken emphasises, new media art has always been aware of its roots in art history. However, mainstream contemporary art continues to overlook the fact that the technology-based art field belongs to contemporary art and tackles the topical issues of today (Paul 2011).

For instance, in comparing the ideas and examples of participatory and interactive art discussed above, many pieces of interactive art follow the criterion of participation's social form and collaborative experience. While Lygia Clark and Helio Oiticica used objects as propositions in their works, the art pieces containing human-computer feedback processes apply a similar approach. Interactive installations take advantage of technology to engage the audience, such as a tracking system inviting a spectator to use its body as an interface, a microphone sensor enabling voice interaction, sensitive surfaces reacting to touch and so on.

In short, when analysing an interactive artwork, the contemporary theories of participatory art cannot be taken verbatim, because the technology-based art pieces are not in their scope at all. Hence, I have drawn on the ideas of Bourriaud and Bishop in understanding the properties of participatory art alone and applied the thoughts of the leading researchers of interactive art to construct the frames of that field. To put it clearly and simply, an interactive artwork contains some interactive or reactive element(s) that a viewer can interact with. The interaction is mediated by a computer or electronic system, which is responsive to audience interaction to the extent that an artist has designed it to be. In short, the audience completes the work, which is performed by a technological medium.

If the roots of interactive art are quite vague, then the pioneers of the field can be easily identified, and they include Myron Krueger, David Rockeby, Christa Sommerer and Laurent Mignonneau, Monika Fleischmann and Wolfgang Strauss, Jeffrey Shaw and Masaki Fujihata. These artists' works are considered technologically and conceptually advanced, and in terms of realisation they were perceived as technological wonders back in the 1980s and 1990s. The pioneering artists were applying and often themselves developing complex digital systems to create novel interactive interfaces for the audience. It is impressive to see how these visionaries were challenging technology in order to make an artistic statement regarding audience interaction and the open format of artwork.

It will be difficult to introduce all of the pioneer artists of interactive art within the framework of this thesis; thus, I have picked the most influential in my view. Starting with Christa Sommerer and Laurent Mignonneau, in the words of Itsuo Sakane the artists are "one of the most innovative teams of interactive artists. The reason for this is that their works have always been a beautiful unity of scientific knowledge and artistic sensibility – not to mention the audience's elation when interacting with a particularly unique type of interface design. Their early works, like "Interactive Plant Growing" (1992) or "A-Volve" (1994) illustrate the beautiful integration of scientific concepts and the joy of participation for the audience." (Sakane 2007: 30)

Sommerer and Mignonneau see influence, inspiration and parallels in John Cage's practice in their work. Furthermore, the artist duo describe their artworks as a process that is open to audience interaction, play and creativity (Sommerer and Mignonneau 2007: 87). Also, Christine Schöpf and Hannes Leopoldseder, in their article "The Open World of Christa & Laurent", recognise the open process of Christa's and Laurent's works, which invites the audience to shape and change the artwork. Moreover, the artists were successful in crossing and blending real and virtual spaces as early as 1992 with the art installation "Interactive Plant Growing" (Leopoldseder and Schöpf 2007: 38). The artwork consists of real plants and a projection. By touching or approaching the plants, the beholder would make the computer system generate new plants that would appear on the projection. Hence, the artists apply real plants as a bio interface for affecting the virtual space and inviting the audience to participate in the virtual plant growing. To be more precise: "One of the first interactive computer art installations to use a natural interface instead of the then-common devices such as joysticks, mouse, trackers or other technical interfaces is our installation Interactive Plant Growing (1992)." (Sommerer and Mignonneau 2007: 40)

With “A-Volve”, Christa Sommerer and Laurent Mignonneau won the Golden Nica at the 1994 Prix Ars Electronica. The artists refer to the interactive installation as “one of the first systems where visitors could actually create artificial creatures, interact with them and watch them evolve” (Sommerer and Mignonneau 2007: 76). “A-Volve is an artistic interactive computer installation that implements artificial life, genetics, evolution as well as unencumbered interaction within virtual space.” (Sommerer and Mignonneau 2007: 72) Erkki Huhtamo recognises the high complexity of thinking and technology behind the interactive installation and also underlines the appearance of collective interaction (Huhtamo 2007: 34). Once again, the duo offered an unseen and inexperienced interface for that time: the audience was invited to create and interact with virtual creatures that lived in a water-filled glass pool. “These virtual creatures are products of evolutionary rules and are influenced by human creativity and decision. By designing any kind of shape and profile with their finger on a touchscreen, visitors ‘bear’ virtual three-dimensional creatures that are automatically ‘alive’ and swim in the water of the pool.” (Sommerer and Mignonneau 2007: 76)

To sum up, Sommerer and Mignonneau are two of the most influential pioneers of interactive art. At the beginning of the 1990s, they were working with advanced technologies and experimenting with novel interfaces. The duo contributed a vast amount of knowledge and inspiration to the field. Despite the heavy character of interactive technology, their works always mirror finely tuned artistic concepts.

Introducing another example of pioneer interactive art practice, the work of Myron Krueger is considered extremely vital in the development of the field. He was the first artist to receive the Golden Nica international prize for interactive art in 1990 for his work “Videoplace” (1970–1990). Krueger’s first computer-controlled environment

“Glowflow” originates from as early as 1969.[2] Already then, the artist was working on his ideas about interaction, virtual realities and reactive environment. Furthermore, Myron Krueger is known for coining the term “interactive environment” (Krueger 1983).

Regarding “Glowflow”, the installation would change its light and sound when the audience would activate the sensors, which were integrated into the walls (Giannetti 2004). Hence, the audience was invited to be part of the work and use their motion as an interface for exploring various dimensions of the artwork. Though the artist himself considered the artwork to be aesthetically successful, he deemed it a failure in terms of interactivity (Krueger 1990: 174).

A year after he started work on “Videoplace” and continued its development until the early 1990s. Krueger’s goal was to achieve “a new form of human experience” in interactivity. No computer was involved in the first versions of the installation, simply a video camera and projection screen. Hence, the artist was manually simulating interactivity in order to test his ideas. Later Myron Krueger started to develop his own computer system, in order to realise his vision of artificial intelligence. In his words: “It is not the goal of this work simply to make old art forms interactive, but rather to discover a new aesthetic which will allow us to create experiences that uniquely focus on the new opportunity provided by interactivity.” (Krueger 1990: 175)

There is a significant difference between “Videoplace” and “Glowflow”. While in Krueger’s early work it was difficult to understand how exactly audience interaction with the installation affected it, “Videoplace” demonstrated a real-time response to an interactor’s movements and gestures. Matthias Weiss describes

2 “Glowflow” was realised in collaboration with various artists and engineers.

the nature of Krueger's practice quite precisely: "In his environments, no parallel worlds in which people 'immerse themselves' are developed. Instead, the actor in his installation is not restricted by technology applied to his body but rather possesses complete freedom of movement so that he can respond to visual and acoustic stimuli. As a rule, this work consists of a surveillance camera which is linked to computers through feedback systems." (Weiss 2004) In other words, the live video image of a participant meets with the graphic images and is free to interact with on the shared projection.

In short, Myron Krueger's ultimate drive was the development of novel real-time body-interfaces that accommodate man-machine dialogue. Therefore, it took the pioneer over 20 years to complete "Videoplace", which must be considered with the fact that interactive technology was not yet developed until the early 2000s, highlighting the fact that the artists working in this field were great visionaries and able to cope with the high complexity of technology.

2.3 The Crisis of Interactive Art

When it comes to the establishment of the field, although the first traces of interactive art practices date back to the 1950s, interactive art became widely recognised as a discipline in 1990 when Prix Ars Electronica introduced a dedicated category for the discipline (Kwastek 2013: 8). Roger F. Malina announced it as "The Beginning of a New Art Form" in the catalogue of the festival (Malina 1990: 157). The Prix together with the Ars Electronica festival and since 1996 the Ars Electronica Centre and Futurelab[3] have played an important role in the history and research of interactive media art. Since the 1980s, Prix Ars Electronica has been used as a reference point for the development of and new trends in media art. Thus, I find reflecting on the timeline of the festival and jury statements regarding interactive art appropriate. Saying that, the discussion about the crisis of the field started with the 2004 Prix Ars Electronica when the Golden Nica went to "Listening Post" by Mark Hansen and Ben Rubin, which had no interactive element concerning audience involvement. This fact triggered a discussion around the definition of interactive art. For example, Erkki Huhtamo has written a number of texts on this topic. Also, the new media art festival Transmediale in Berlin held a panel titled "The 'Crisis' of Interactive Art" in 2003 to debate whether the interactive art domain was going through a crisis or normalisation period.

3 The Ars Electronica Center was also known as "Museum of Future". The Ars Electronica Center was re-opened in 2009. Source: https://www.aec.at/about/en/geschichte (accessed 2 Dec 2017).

The question is how we define these kinds of works that are not interactive towards their audience, but still incorporate an internal system interaction with a data source. When one does not take the last fact into account, the art piece from the audience point of view offers solely mental engagement, similar to a painting or static sculpture. In my view, extending the term of interactive art to such an extreme extent that one could potentially classify an abstract painting as an interactive work is a subversive strategy unless new vocabulary is introduced to help define the internal processes of the interactive system.

At this point, I share an opinion with Erkki Huhtamo, who has written several critical texts since 2005 on the dangers of relaxing the definition of interactive art and even referring to the situation as "the identity crisis of interactive art" (Huhtamo 2007). In Huhtamo's words: "If the word interactive is to retain anything about its former distinctiveness, it should, perhaps, be after all reserved to cases where active and repeated user-intervention plays a significant role in the functioning of the system. From such a perspective, computer and video games are clearly an interactive medium; games relying entirely on "system interaction" would be an absurd idea, while system interaction is always an essential element of their architecture. Of course, interactive art can – and should – stretch the definition of interactivity and explore its limits, but I still feel that the issue of user interaction should remain an essential part of its territory." (Huhtamo 2007)

At the 2007 Prix Ars Electronica, a new category was introduced titled Hybrid Art, which was meant for artworks like "Listening Post" that fall between categories and cannot be classified as interactive art, computer animation, Net.art or under any of the festival's other categories. However, after the first jury meeting, it was decided that the main interest of the category would be bio art. The jury states following: "…the new

Hybrid Art category, it is a shift in the interests of 'new media' artists, beyond the information technologies of the networked computer, and towards materials technologies – biological, chemical, mechanical, and (undoubtedly soon) nanotechnological." (deLahunta et al. 2007: 105) The first Golden Nica in the Hybrid Art category went to the artistic laboratory SymbioticA, which is dedicated to bio art.

Nevertheless, in 2013 the Golden Nica for Interactive Art was awarded to yet another non-interactive installation, this time to "Pendulum Choir" (2010) by Michel and Andre Decoster. The jury statement in the Prix catalogue is quite short: "…interactivity should no longer be defined by a specific formal language prescribed by the vocabulary of the 1990s. Today, most of all, it is a set of strategies that can be situated in multiple contexts, within the art world and outside of it." (de Vicente et al. 2013: 156) Moreover, in the interview to Digicult magazine, the authors state themselves that the artwork is not about interactivity, but rather a live choral performance and robotic installation (Tonucci 2013). Since 2004, the jury of the Interactive Art category has been trying to communicate the expansion of the domain. Perhaps this explains why Ars Electronica renamed the Interactive Art category to Interactive Art+ in 2016. As Raivo Kelomees (2016) writes in his festival review article titled "Interactive Art in Crisis" (*Interaktiivne kunst kriisis*), no one even bothers to discuss if the work is interactive or not if it is visually or conceptually impressive and an extended form of the field. In the jury's words: "The language of interaction in the realm of art has matured to the extent that it is now able to occupy spaces outside of the artists' laboratory and beyond the confines of the screen. In the era of hyper-connectedness, interaction is the most pervasive medium that allows the art to create a dialogue with every form of human activity." (De Jaeger et al. 2016: 6) The statement remarks that the artistic interests have gone social and political. The bare excitement of new interfaces is no longer actual. This statement is also clearly expressed by the winning artwork "Can you hear me?" (2014) by Christoph Wachter and Mathias Jud, which is an independent Wi-Fi network enabling independent communication and an act against surveillance and control. In my view, naming everything that is not interactive or on the net as a hybrid is not a long-term solution in the sense of artistic research. Regarding the festival, it is acceptable and reasonable because Ars Electronica's aim has always been to discover new talents and trends.

Meanwhile, as a result of ubiquitousness and the commoditisation of technology, the interest towards interactive technology in the art sector has decreased, while interest from the commercial side has increased. This means the art audience is much more critical today and it demands meaningful concepts and refuses to be playful. For example, Edward Lucie-Smith in one of his essays refers to the DECODE: Digital Design Sensations exhibition that took place at the Victoria & Albert Museum in London in 2009 as "a combination of art exhibition and indoor amusement park" (Lucie-Smith 2012: 32). Also, he expressed a need for a curatorial position regarding audience interaction, which leads me to think that interactive art has reached its stabilisation level, allowing critical and conceptual discourse instead of simple technological categorisation. It should not be interpreted that the interactive artist had no critical voice before that period. On the contrary, there are pioneer interactive artworks, such as "Lorna" (1983/1984) by Lynn Hershman Leeson, "World Skin" (1997) by Maurice Benayoun and many more that question the role and impact of modern technology.

I believe the problems within interactive art lie in the fact that interaction has become a part of our everyday life. For example, Andy Cameron wrote the following in the 2009 Prix Ars Electronica catalogue: "The interactive is so ubiquitous in our daily lives that it's almost vanished into the background, become ordinary, even banal". (Cameron 2009: 144) Or in Huhtamo's words: "Today interactive media is everywhere; its forms have become commonplace." (Huhtamo 2007) Also Daniel Dieters has stated the same: "Today interactivity is no longer an experiment in the media lab or an experience in a media art exhibition but part of everyday life in digital culture." (Dieters 2008: 56) Thus, no one is surprised any longer by a touch screen or body tracking. The interaction methods that were applied in "Videospace" by Marion Krueger in the late 1980s are today used by commercial industries, like Burger King, Kinect XBox and PlayStation, in order to attract customers and demonstrate their innovative mindset, which in reality is them benefiting from the idea of new media artists without even crediting those creative people. There are well known examples of advertising agencies copying code-based artworks, like "AR Magic System" (2007)[4] by Clara Boj and Diego Díaz, with the concept of replacing spectators face, which was used by Netflix in their Snapchat face swap campaign (2016); Red Bull copied "Laser Tag" (2007)[5] by Graffiti Research Lab; "Pulse Room" (2006)[6] by Rafael Lozano-Hemmer was copied by MID/Media Interactive Design in 2012 in the project "Corazones conectados" for Danone in Buenos Aires and there are many more examples. The problem is so vast that Golan Levin (2012) dedicated a whole presentation at the ETA Conference in Toronto to address this unfair and unethical issue. I believe this situation illustrates well how interaction has become an attraction for the masses and interactive technology a part of our daily lives.

Hence, it was not without reason when the CEO of Sun Microsystems Scott McNealy in 2005 announced:

4 http://www.lalalab.org/ar-magic-system (accessed 1 March 2018).
5 http://www.graffitiresearchlab.com/blog/projects/laser-tag (accessed 1 March 2018).
6 http://www.lozano-hemmer.com/pulse_room.php (accessed 1 March 2018).

“Welcome to the Participation Age”. All our engagement, which has become dependent on social media and other web-related platforms, has been turned into a surveillance mechanism either for monetary or state regime reasons. “It is not the emancipation of consumerism but a new edition of the economics of attention based in high-technology in which any activity by a viewer potentially becomes commercially measurable and exploitable.” (Dieters 2008: 55) In other words, the participation age gradually reveals its surveillance face instead.

Therefore, artists are eager to explore novel forms of interaction and the embodiment of different methods, while addressing technology, participation and interaction from a critical point of view. As Henri van de Velde said: “Art is changing its shape because society is changing its shape.” (Cited in Alemberg 2010: 4) Hence, many artists are investigating novel technologies by taking a critical look at the post-digital age, and continuing to expand the borders of art.

In my opinion, artists have been moving away from classical interaction because of its commodification and application by the commercial sector. Undoubtedly, there is nothing left but entertainment if an interactive installation has no critical concept in it. Hence, because of the commoditisation of interaction technology, the serious exhibition venues and curators have started to look for a conceptual value of digital artworks instead of curating based on the medium. In other words, artists in the post-digital age are extremely aware of the seductive and subversive technology; therefore, artists have instead shifted their practices towards critical discourse and not the celebration of the medium as was often common in the 1990s in media art. “Inventing new imaginations that deconstruct, re-appropriate and even subvert technology as a way of expression has become essential in the production of interactive art.” (Cameron 2009: 144)

2.4 From Interaction to Post-Participation

Since this chapter is about the shift from interaction to post-participation, it is interesting to note that in 1996 Söke Dinkla wrote about the transition from participation to interaction. In her article, Dinkla explores the roots of interactive art from the perspective of audience engagement. What is interesting to me is to see how the role of a spectator has been shifting over time. With the introduction of interactive technology into the arts, human-to-human interaction has been transformed into a machine-to-human one. In Dinkla's words: "The artistic material of interactive art is the automatised dialogue between program and user. Interactive artworks provide a critical analysis of the automatised communication that is replacing interhuman relationships in more and more social fields. The distribution of power between user and system is not just a technological issue but a social and political one as well." (Dinkla 1996: 289–290)

There has been yet another shift in the role of the audience today, in which a dialogue between two systems where the user(s) serve not an active but a passive role of input has been added to the dialogue between system and user. Hence, it is appropriate to state that there is a tendency to move from interaction to post-participation both in art and in general. Therefore, this situation, which is profoundly social and political, and not merely technological as Lynn Hersman Leeson and Dinkla wrote in 1990 and 1996, respectively.

The problematics of modern power are addressed by a number of artists, who manifest voyeurism, surveillance capitalism, dataveillance and societies of control in their art practices. As Machiko Kusahara highlights effectively: "Artists foresee and at the same time look back at what is beyond or behind the technical issue, visualizing the real meanings of technology." (Kusahara 1999: 60) For example, Lynn Hershman Leeson has discussed voyeurism in her works since the 1970s. She also received the Golden Nica prize from Prix Ars Electronica in 1999 for "The Difference Engine #3", which underlines complex relationships between real and cyberspace. Furthermore, Rafael Lozano-Hemmer has addressed surveillance in several of his artworks, including "Surface Tension" (1992), "Under Scan" (2005) and others. Seiko Mikami's artwork "Desire of Codes" (2005) illustrates well the excess gaze of cameras in our society. And there are many more artists who deal with these issues. In other words, monitoring, surveillance, dataveillance and control are echoed in a number of artworks, which is often manifested in the form of helpless audience. Hence, we are not talking about an active, but rather a passive participant, who is controlled and manipulated by the system.

The fact is that society today is heavily dependent on technology and networks. The pervasive and smart technologies are not only converting humanity into cyborgs but are already a part of our behaviour pattern. While William J. Mitchell described disconnection as painful as an amputation in 2003, today disconnection is not even an option. Disconnection stands for non-existence. The idea behind the theories of post-internet and post-digital are the pervasive networks, which are part of us; therefore, one takes internet and digital technology as integrated parts of life and uses and consumes them without noticing. In the words of Nicholas Negroponte, who already predicted the post-digital age in 1998 and claimed that the digital revolution was already over: "Like air and drinking water, being digital will be noticed only by its absence, not its presence. [—] Computers will be a sweeping yet invisible part of our everyday lives: We'll live in them, wear them, even eat them." (Negroponte 1998)

That kind of inseparability from technology elevates surveillance to another level, which effectively means that we are always watched and processed at every moment of the day. Maciej Ozog underlines in his article that the symbols and theories of surveillance, such as panoptic surveillance and camera gaze, have lost their former meanings. Society has accepted the constant gaze of cameras and algorithms. Contemporary surveillance culture dictates voyeurism and exhibitionism, which have become a normality today. In his words: "Surveillance has become a common experience and practice of everyday life at the edge of the twenty-first century." (Ozog 2010: 95) Moreover, society is confronted with the high complexity of surveillance systems and strategies. According to Ericson and Haggerty, "[w]hile surveillance is now ubiquitous, it is also diverse, multi-faceted, and employed in such a panoply of projects that it is almost impossible to speak coherently about surveillance" (Ericson and Haggerty 2006: 22). Hence, Ozog sees particular importance in the role of artists working with technology, who are able to "deconstruct and subvert the strategies, politics, and ideologies of modern electronic surveillance". In other words, the artists applying and conceptualising surveillance technologies are the ones who help us realise the level and nature of control today. Therefore, I believe it is important to conduct research on passive modes of participation that are enabled by the surveillance age. And this is the reason for not calling the involuntary or unaware participation extended, hybrid or system interaction, but rather post-participation. My intention is to explore and contextualise implicit participation modes of the time of extensive dataveillance. As Maciej Ozog states: "Watching and being watched are the conditions of participation in surveillance culture." (Ozog 2010: 97)

Coming back to interactive art, as mentioned earlier, while defining the territory of interactive art, the involvement of spectators goes beyond a mental involvement and the audience becomes actively engaged in the case of interactive artwork. For example, well-known interactive artists and researchers Monika Fleischmann and Wolfgang Strauss (2008) underline interaction as an artistic medium that focuses on the physical action of the audience in their article. However, in the post-digital age, this focus has shifted elsewhere. The art piece can be completed by the data we are generating, sensor data and more indirect inputs that the public has no control over.

At the end of the 1980s, the higher computing power and storage capacity of machines opened the horizons of artists working with technology by facilitating 3D animation in real time, along with the physical immersion of the audience into cyber space by using novel interfaces, such as data gloves and virtual helmets. According to Dieters, the technological development "presented the basis on which in the following decade various models were developed for the interaction of human and machine, of real space and data space. [—] The emancipationist or mediacritical approaches that were obligatory in the video art of the 1960s and 1970s now almost disappeared." (Dieters 2008: 40)

Hence, while artists in the 1990s and 2000s were mainly concerned with creating installations that were as responsive as possible along with novel interfaces for a spectator to interact with, in the information age the interest has moved to the world of data. Post-participation goes beyond the interface; it embeds real-life elements, and unaware or passive participation in an artwork. The everyday activity becomes a score for the artwork; it completes the open process of the piece. The direct interaction of audience is no longer required; the data that each of us generates being in physical or cyberspace can act as a post-participative input for an interactive system. Hence, a post-participative artwork does not ask for interaction from its audience; it makes use of real-time data generated by social media users, CCTV camera video feed or some other data source that we do not have control over or have no clue about. In short, such artworks are not open for direct interaction, but for a real-time data source that makes a work of art alive. In this thesis, such a real-time data source is referred to as a post-participative input. Similarly to an interactive work, a post-participative piece changes along with new input, though the cause for the change is not a beholder, but a selected data source – a post-participative input. In other words, the position of the audience regarding the post-participative work of art is not active or creative. Put another way, a spectator is placed in a position to be surveilled or be an observer while the system tracks others and is in control of the spectacle.

In a nutshell, a post-participative artwork can be seen as an open process that follows the fluctuation of life and/or change in space. What is different from an interactive artwork is the position of the audience regarding the work of art. And the position is neither active nor responsive as an interactive art piece would require, but is passive. In other words, a post-participative artwork marginalises the active role of a spectator. Post-participative art responds to a different source of input, which is real-time data generated by the normal behaviour of humans or animals. Post-participative input can be captured in an image, trigger a sensor or create data with his/her everyday activity either in the virtual or physical space. Post-participation requires unaware human or animal participation. Meteorological, environmental or any other kind of data that does not originate from a living organism is not described as a post-participative input.

Often post-participation can be applied to works that fail to be categorised as interactive, such as "Listening Post" by Hansen and Rubin, which offers no interaction to its audience. However, the artwork is open and never the same, since the messages that appear on the 231 small displays and are read out loud by the computer system come from chat rooms and forums on the internet (Hansen and Rubin 2004). According to Kluszczynski, "Listening Post" can also be described as the Strategy of System. He has introduced this term in order to explain the artworks that demonstrate system interaction and leave the audience without any interaction element. Kluszczynski refers to two types of Strategy of System: first is a group of people online and unaware of their input role as a data source for the interactive system. The work's output system is connected with the audience, though, which is radically different from an interactive artwork in the classical sense. In the case of interactive work, spectators act as an input and experience the output of the work. The second type of Strategy of System that Kluszczynski introduces is described as "total autonomy of technological order" (Kluszczynski 2010). It means that there are no unaware or passive participants; rather the work is completed by automatic data sources, like meteorological measures, which correspond or make a change in the artistic spectacle that is offered for contemplation to the audience. In the words of Kluszczynski: "Each change of meteorological parameters results in transformations of the system in the gallery installation attributed to it. Its audience, with no exceptions, comes down to the role of a spectacle's observers." (Kluszczynski 2010)

Kluszczynski makes valid points and underlines once again the fact that interaction has travelled to the system level. Definitely, the ideas and understanding of Kluszczynski resonate with post-participation. However, post-participation is not solely about system interaction, but instead it investigates the role of the participative component in the work and distinguishes several categories of it.

In order to clarify the meeting, as well as departure points between participative, interactive and post-participative art, the three domains are compared below in Table 1. I have chosen famous artworks in order to explain the differences and similarities between them concerning audience involvement. Hence, as a participative artwork I have picked "Untitled (Free/Still)" (1992–) by Rirkrit Tiravanija, as an interactive piece "Body Movies" (2001) by Rafael Lozano-Hemmer, and "Listening Post" (2001) by Mark Hansen and Ben Rubin as a post-participative example.

To briefly introduce the works, "Untitled (Free/Still)" by Rirkrit Tiravanija is a participative installation, in which the artist cooks and serves Thai curry to visitors of the exhibition (see Figure 3). This format was performed for the first time by Rirkrit Tiravanija in 1992 at the 303 Gallery in New York. The aim of the artist is to create new relationships between the audience and transform a formal exhibition space to a social one by offering a bowl of rice for free to everyone.

Figure 3: "Untitled (Free/Still)" (1992–) by Rirkrit Tiravanija at 303 Gallery in New York. With the kind permission of Kurimanzutto Gallery.

When it comes to “Body Movies” by Rafael Lozano-Hemmer, which is inspired by a shadow play, the interactive installation allows the audience to play with their augmented shadows in the urban space (see Figure 4). Moreover, each shadow reveals a portrait that was previously taken in the city in which the artwork is shown. As Lozano-Hemmer explains: “However, the portraits only appeared inside the projected shadows of local passers-by, whose silhouettes measured between 2 to 22 meters high, depending on how far people were from the powerful light sources placed on the floor of the square.” (Lozano-Hemmer 2002) The artist uses tracking technology and robotic projectors to realise the installation (Paul 2003).

Figure 4: “Body Movies, Relational Architecture 6” (2001) by Rafael Lozano-Hemmer in Rotterdam. Courtesy of the artist.

“Listening Post” by Mark Hansen and Ben Rubin (see Figure 5) is an aesthetically immersive art installation consisting of 231 small text displays that show fragments of real-time data taken from 5,000 online forums. The artwork also has a real-time audio component that reads our loud selected text messages. The artists explain the aim of the project as follows: “‘Listening Post’ is an attempt to understand the patterns that emerge from thousands of simultaneous conversations and the dynamics that govern their shifting topics." (Hansen and Rubin 2002)

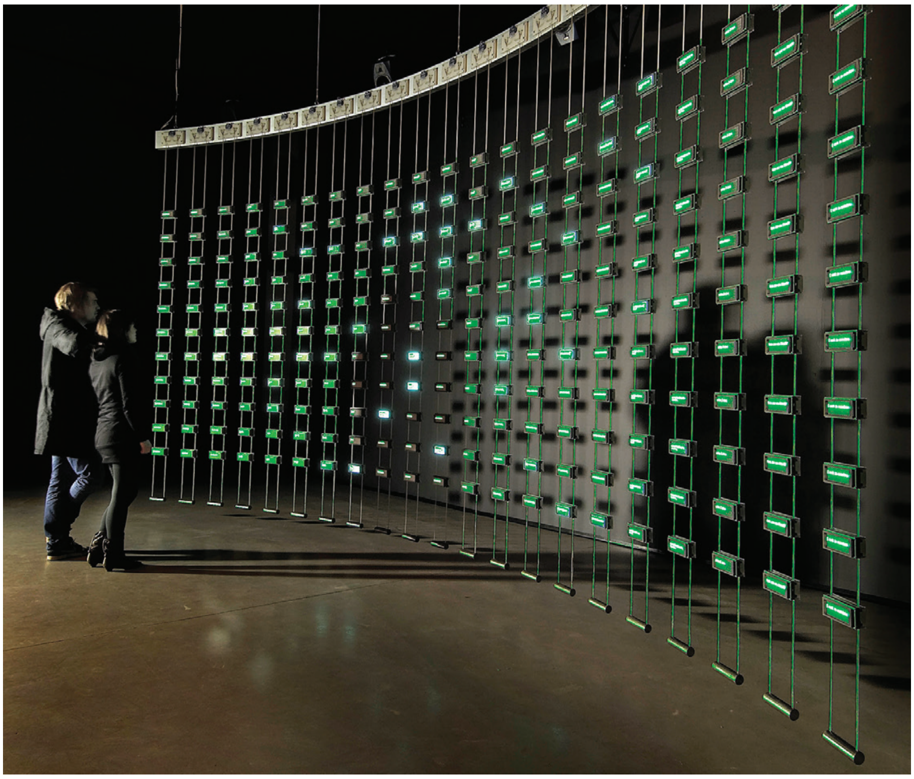

Figure 5: "Listening Post" (2001) by Mark Hansen and Ben Rubin at the Prix Ars Electronica 2004 in Linz. Courtesy of the Archive of the Ars Electronica Linz GmbH.

In my view, the examples of participative and interactive art are more similar that they seem at first glance. Both Tiravanija and Lozano-Hemmer try to find a metaphor for participation, a typical scenario that the audience is able to recognise and relate to. For instance, Rirkrit Tiravanija applies the everyday habits of cooking and eating that we all share, and Rafael Lozano-Hemmer uses a shadow play that we have all enjoyed as kids. What is more striking is that Lozano-Hemmer describes his series of works, including "Body Movies", that alter the memory of a building through the visual and participative elements as "relational architecture" (Lozano-Hemmer 2001). At the same time, Rirkrit Tiravanija's practice is known as an example of relational art (Bourriaud 2002).

Moreover, both artworks are meant as a collective experience. It should be mentioned that Lozano-Hemmer's art installation is very advanced for 2001 and facilitates multiple-person interaction out-doors. It is quite common for that time, and in general, that interactive artwork offers an individual experience. It is known as "taking turns" syndrome according to Rafael Lozano-Hemmer (2001). Hence, both artworks require active participation from the audience, and the participants are aware of their role. There is a significant difference between this and post-participative artwork. In the case of "Listening Post", the audience is passive and just has a contemplative role. A spectator does not influence the text messages that are read out and appear on the small displays. The post-participative input to the artwork comes from the users of the 5,000 online forums selected by the artists. The users of these forums are not aware of their participation in "Listening Post", and moreover, they cannot control their participation. Ultimately, Hansen and Rubin are not concerned about creating a new relationship, like Tiravanija and Lozano-Hemmer, but visualise the theme of online discussions and forward the vast amount of communication that is taking place online. Their intent is to embed a piece of life that happens on the net into an art installation.

When it comes to the differences, they are introduced by the responsiveness of an artwork and the type of interaction. In an interview with Heimo Ranzenbacher, Lozano-Hemmer states the following: "My pieces do not exist unless someone dedicates some time to them." (Ranzenbacher 2001) This means that the piece is invisible without audience interaction. As soon as a spectator steps in, the artwork appears and immediately responds to the interaction. The effect of interaction can be felt right away. In the case of the participative artwork, the situation is different. There is no immediate response to be offered to the audience. We are instead speaking about a ritual that takes place during a certain time. If someone is late for the cooking and eating session, or happens to visit the show on a day when the artist is not cooking, then one has just to imagine how the meal tasted (Figure 3 describes my point well). When we talk about an interactive artwork, one cannot be late to taking part in it because the interaction is the essence of the art piece. When "Listening Post" is analysed from the same perspective, it has no responsive component that the audience can perceive.

Another difference between the artworks is the type of interaction. "Untitled (Free/Still)" demonstrates human-to-human interaction, which is the basis for the creation of new relationships. "Body Movies" also stimulates interactions between the participants. However, these interactions are mediated by the interaction technology. In other words, human-machine interaction has more value, and it is a pre-condition for the appearance of human-to-human interaction. "Listening Post" contains an internal system interaction, which is mediated by the computer system.

To sum put, participative and interactive art are quite related. Both domains aim to create new experiences and relations for their audience. The difference is that technology mediates an interactive artwork and a participative one does not. Moreover, "Body Movies" is immediately responsive to the audience interaction and is invisible without anyone participating. On the contrast, "Untitled (Free/Still)" takes place at a certain period without an immediate response to the audience participation. When it comes to post-participation, the big difference is introduced by passive and unaware participation. The meeting point with an interactive piece is in the existence: if there is no input, the artwork is not complete. Of course, in the case of "Listening Post", the audience does not serve as input and output, which is the case of "Body Movies", but only as output. The input is the generated content of users from the 5,000 forums.

	Participative artwork	Interactive artwork	Post-participative artwork
Examples in author's body of work	Example: "Untitled (Free/ Still)" (1992–) by Rirkrit Tiravanija	Example: "Body Movies" (2001) by Rafael Lozano-Hemmer	Example: "Listening Post" (2001) by Mark Hansen and Ben Rubin
Audience engagement with the artwork	Explicitly and actively engages the audience. Active audience	Explicitly and actively engages the audience. Active audience	Does not aim to actively engage the audience. Implicit way of participation. Passive audience
Awareness of participation	The audience knows about its participation in the artwork	The audience knows about its participation in the artwork.	The audience does not know and/or has no control over its participation in the artwork
Responsiveness to the audience input	Is not immediately responsive to a spectator's participation. Often the participation is experienced collectively and it lasts over a certain period of time.	Is responsive and open towards the spectator's interaction with the artwork.	Does not respond to the spectator's input directly or does not respond at all.
Actor	The audience takes part in the artwork.	The audience activates and alters the artwork.	Daily human or animal activities form part of the artwork.
Focus	Focus on the participative spectator	Focus on the active spectator	Focus on the system(s) interaction
Type of interaction	human-human interactions take place. Is not technologically mediated	Human-machine interactions take place. Is mediated via interaction technology	System-system interactions take place. Is mediated via interaction or other digital technology
System input	NA	Interactive system requires some kind of audience input	Interaction happens within the system
Interactive or reactive elements	Does not have interactive or reactive elements. Some works might have the elements of chance (dice, for example).	Has interactive or reactive elements that a spectator can interact with	Does not have interactive or reactive elements for direct interaction.

Table 1: The comparison of participative, interactive, and post-participative art.

In short, I see that post-participation opens a new space for the artworks that do not fall under the interactive art category and is more descriptive in respect to the role of the audience than the suggested database or net art in Erkki Huhtamo's (2007) article. Moreover, post-participation is a useful term for me as a researcher and artist because it helps me to understand the evolution of my practice from the perspective of audience involvement. Also, post-participation enables artists to address the problematics of privacy in the age of dataveillance.

2.4.1 Direct vs. Indirect Post-Participation

I have decided to divide post-participation into two different categories: indirect and direct post-participation. This need became clear when analysing my own and related artworks, which demonstrated either connection or disconnection with an exhibition space in regard to the origin of post-participative input. Below I describe the criteria for direct and indirect post-participation, which is later used as a basis for discussing the artistic practice. Figures 6 and 7 contain the same relationships between author, artwork, audience and post-participative input as explained in the introduction supported by Figure 2. In short, it visualises the passive role of the audience and post-participative input: the first, perceiving the output from the artwork, and the second, acting as input for the artwork. The only dialogue here is between the artwork and author, which mostly happens during the creation period and when customising the installation for a certain location or new input. The difference is in the origin of post-participative input, which the figures below aim to communicate.

An indirect post-participative artwork has no connection with the physical space in which it is displayed. Figure 6 below demonstrates relationships within an indirect post-participative artwork. It is shown in the schema that the audience in the exhibition space is offered to perceive only the output of the interactive system, which results in the post-participative input responsive artwork. The post-participative input itself is separated from the exhibition space and is located outside of it. For example, such input could be the unaware participation of online users or passers-by registered by a tracking system, which is located in a different location from the artwork. In other words, presence, movement or any other action performed by the audience in the exhibition space is irrelevant. The artwork is composed of an internal computer system that is open to the post-participative data source that is located either online or outside of the exhibition space. Therefore, an indirect post-participative installation does not look for any input from its audience but instead scans the dedicated area of interest constantly. At the same time, it has a connection to a real-life element. For example, "The Rhythm of City" (2010), which is described in detail later, demonstrates indirect post-participation by applying real-time geo-located social media data as a score. The work is in a constant flux that mirrors the digital pace of life, and thus, the digital inhabitants of social media post-participating in composing the rhythm of each metronome. At the same time, the work has no responsive connection with the exhibition space and its audience. Hence, by benefiting from contemporary personal data and metadata aggregation possibilities, indirect post-participation draws on the strategies of dataveillance.

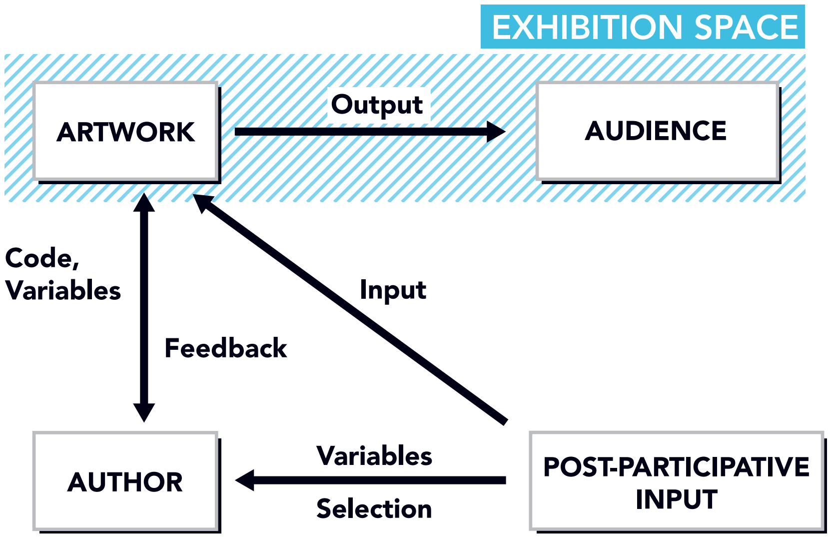

Figure 6: Relationships in the indirect post-participative artwork.

In terms of contrast, a direct post-participative piece has a connection with its physical location (see Figure 7). It means that the artwork, audience and post-participative input share the same space and time. The schema below demonstrates that all three components are located in the same space and the audience without its knowledge or will becomes the input of the artwork. It is important to mention that in the case of direct post-participation the audience does not always form part of the input. The post-participative input can also be an animal one, if they are part of the artwork, as is the case in my artworks "Budgie Waltz" (2012) and "Traveling Fish" (2014). Such cases are discussed in detail in Chapter 4, "Direct Post-Participation".

Moving further, a direct post-participative installation looks for audience participation whether it is voluntary or not, conscious or not. However, active participation is not the aim of the work. By entering the exhibition space, a spectator becomes the interest of the artwork by default. Like Maciej Ozog explains when analysing Rafael Lozano-Hemmer's work: "The viewer-interactor cannot influence the system; she can only refrain from interacting by avoiding a meeting with the digital gaze." (Ozog 2010: 104) Or Erkki Huhtamo (2007) refers to a beholder as an unaware participant when analysing David Rokeby's artworks that deal with surveillance and an observing camera image. In other words, there is no need to be an active participant. Just the act of entering into the scanning territory of installation constitutes the acceptance of participation in the artwork as an input. For instance, James Coupe applies CCTV camera technology and the concept of surveillance throughout his practice. The public is recorded and their image embedded into the artwork. Hence, a spectator becomes both an observer and a participator, or in the artist's words an "unwilling actor", which he/she discovers afterwards (Coupe 2013).

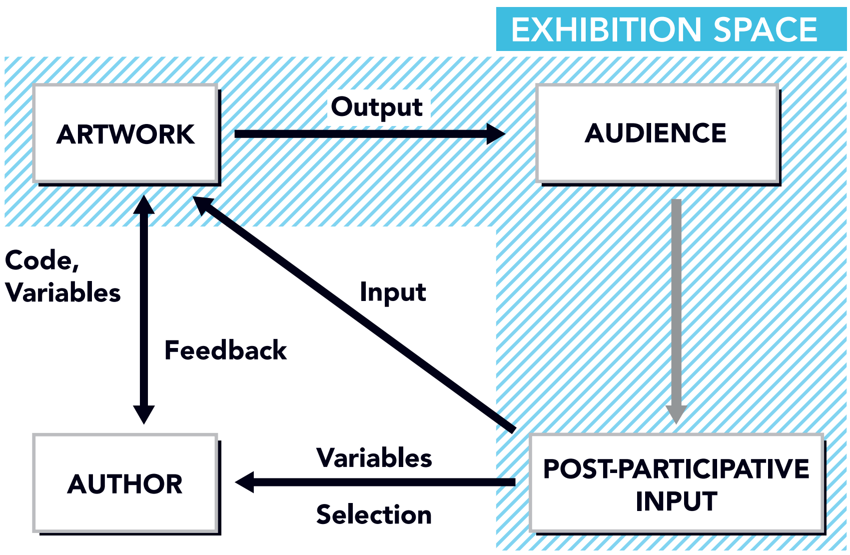

Figure 7: Relationships in the direct post-participative artwork.

In conclusion, all descriptions of the term "post-participation" presented so far refer to the complex surveillance mechanism of today: whether we want it or not, we are always being watched, traced and processed. Therefore, I believe post-participation is a new kind of participation that has been introduced by the post-digital times we are living in.

3. INDIRECT POST-PARTICIPATION

This chapter demonstrates the indirect post-participative components in three art projects of mine: "The Rhythm of City" (2010), "The Rhythm of São Paulo" (2012), and "Baltic Sea Radio" (2012). The two first projects apply geo-located social media data as an indirect post-participative input, and the last project uses AIS radar to receive local marine data and uses that as an indirect post-participative input. Along with "The Rhythm of São Paulo" and "Baltic Sea Radio", "The Rhythm of City" represents an indirect post-participation concept, which refers to the fact that the audience and the artworks' participation input do not share the same space, and thus, the post-participative data source is coming from elsewhere.

All three artworks are discussed in terms of concept, indirect post-participation and realisation. In addition, related artworks that demonstrate indirect post-participation are introduced.

3.1 The Rhythm of City

"The Rhythm of City"[7] (2010) is a central work of the thesis, since it triggered my thinking about the concept of post-participation in my practice and also in my research. Thus, the art project served as a source of inspiration for the research and several artworks that are also introduced in this dissertation.

The artwork applies geo-located social media data as a score that dictates the rhythm of each metronome. Hence, by interacting on social media people participate in the art installation without knowing it and form part of the ticking tempo of ten metronomes that update their rhythm every other minute.

"The Rhythm of City", "The Rhythm of São Paulo" and "Data Tower", although the latter is a directly post-participative artwork, are strongly related to each other conceptually and demonstrate the evolution of my artistic thinking and research.

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7 "The Rhythm of City" was exhibited in many shows internationally. The first exhibition took place at ENTER 5 Biennale in 2011 in Prague. The same year the artwork was shown at VAD festival in Girona, at LAB30 festival in Augsburg and at Elektronika festival in Belo Horizonte. The following year "The Rhythm of City" was installed in Buenos Aires at the centre of San Martin. In 2014, the installation was shown at two exhibitions: "Rhizope" at the Estonian Museum of Applied Art and Design in Tallinn, and at CTI festival in Barcelona. "The Rhythm of City" was shown again in Barcelona in 2016 in a group show titled "Real Time" at Arts Santa Monica museum curated by Pau Waelder.

3.1.1 Concept and Inspiration

"["The Rhythm of City"] embodies real-time data in a series of objects that endow them with a specific meaning and a specific reading." (Waelder 2016: 67) The artwork makes use of geo-located data culled from social networks. To be more specific, user-generated data is applied as a score of the artwork. The installation consists of ten modified metronomes, whose performance score is composed by collecting the geo-located activity of users of several social networks in selected cities in real-time (see Figure 8). Online users of certain cities are participating in the artwork through their everyday virtual communication without being aware of the fact that they have a significant role in the installation. They are taking part in composing the artwork's score. As a result, the audience is confronted with a unique, unpredictable and continuous performance. At the same time, the artwork goes beyond a performative piece; it also shows a city's pace of life.

As I have described in the concept of the work in a previous article, "The Rhythm of City" has a multifaceted concept. First of all, geo-located data are translated into the mechanical rhythm of a metronome. The same rhythm represents a city's pace of life. Second, there is a twist from digital to physical. The digital data are translated into physical kinetic motion and sound. Thus, the meaning of data has been altered and applied for totally different purposes. To be more precise, the same has happened with the metronome – the device has been given a new and unexpected function from its original one. And finally, the users of geo-located social media are influencing the rhythm of a metronome in real-time (Guljajeva and Canet 2011). In other words, the online participants of selected locations, who have no idea about their role, collectively determine the score, and thus, have a core role in the physical installation. Although the participants are not aware of their part, the interactive system of "The Rhythm of City" is open towards the indirect post-participative input, which comes from social media users, and the role of the artist is less present. User-generated big data do not stand for the data anymore, but rather for constant and involuntary participation, which in this thesis I describe as post-participation.[8] In the case of "The Rhythm of City", the real-time geo-located activity of social media users is translated into the tempo of a metronome, which indicates that the installation is post-participative.

With "The Rhythm of City", my idea was to explore a different method of interaction that goes beyond the audience clicking on a menu bar, pushing a button or contributing to any content. I am talking about an artistic interpretation of the virtual social activity and underlining the fact of post-participation and dataveillance in the digital age. Thus, the intention is to translate the postparticipation of target groups on the internet to the physical motion of a metronome, and therefore, through this to describe the urban landscape in a novel way. In addition, my concerns revolve around the malleability of the digital world in relation to the physical one, and the interpretation of digital social data for artistic purposes.

In terms of audience experience, as previously described, "the artwork can be viewed as a representation of a city's pace of life. In other words, the tempo of a metronome is an interface of a city. Through observation one is able to make a conclusion on the tempo of life in a specific city and compare different locations between each other. Hence, the installation can be perceived as a performance by 10 metronomes representing different cities but also one is able to observe a single metronome and listen to a specific

8 See Chapter 2.4, "From Interaction to Post-Participation".

city.” (Guljajeva and Canet 2011)

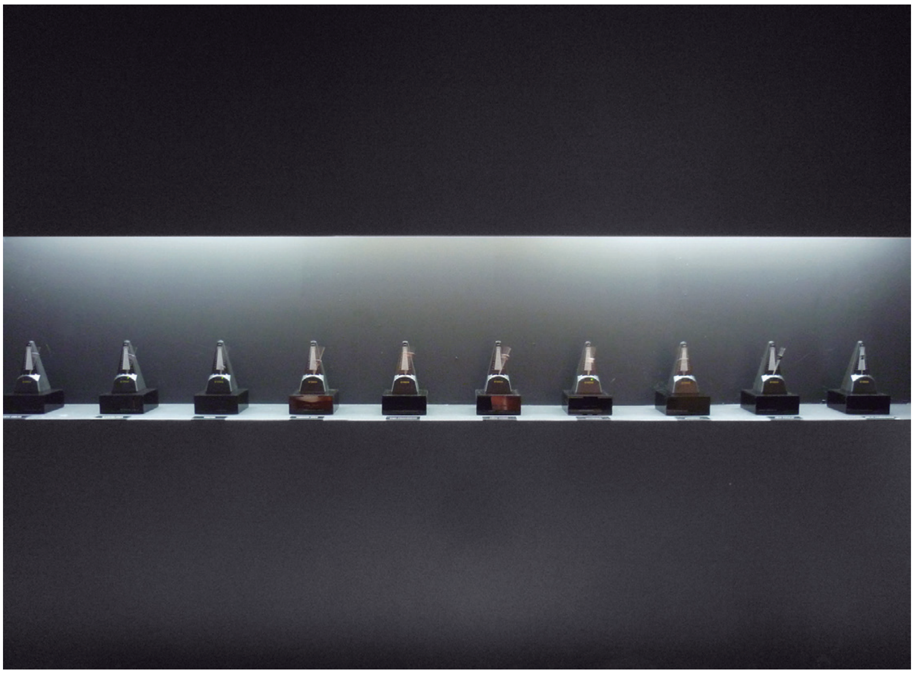

Figure 8: “The Rhythm of City” (2010) by Varvara & Mar at the Elektronika Festival, Belo Horizonte, Brazil.

Concerning the inspiration for this piece, several cultural studies (Bornstein & Bornstein 1976; Levine 1999) have demonstrated that a city and its culture can be described by the speed of inhabitants and services, and its location. These findings, like a positive correlation between the walking speed and the size of the city by Bornstein & Bornstein in 1976, inspired me to research what would be the pace of life in a city, not on its streets but rather in its digital dimension. Before the generation of Web 2.0 when the internet was not yet location aware, Marshall McLuhan’s (1989) concept of the global village made sense. The technology did not provide geo-locative distinction, and thus, it was possible to see the internet as one big global village. However, the introduction of geo-locality by social media platforms, like Facebook, Twitter, Google and more, brought in a new paradigm that facilitated tracking the location of specific users’ activity, and thus, introduced novel ways for the interpretation of these data in relation to a place. The development of software was enabled by that of hardware, more precisely, ubiquitous mobile computing. After the launch of the iPhone 3G in 2008, Steve Jobs stated: "Location services are going to be a really big deal on the iPhone; it's going to explode." (Montgomery and Mingis 2017) Hence, Twitter started working on location-aware tweets immediately on releasing its API for developers in 2010 (Stone 2009). Since then mobile social media networks have gone viral offering location-based services. Moreover, Andreas Kaplan introduces four categories of mobile social media applications: Space-timers (location and time sensitive), Space-locators (only location sensitive), Quick-timers (only time sensitive) and Slow-timers (neither location nor time sensitive) (Kaplan 2012). In other words, mobile social media has become dynamic and aware of a number of parameters. Hence, by the appearance of advanced mobile technology, the world became more connected, instant, complex, data-rich and aware, as well as tracked and surveilled.

Regarding the reason for using a metronome, "Poème Symphonique for 100 metronomes" by György Ligeti (1962), where he set 100 metronomes to a different tempo and let them perform until they stop, was a great influence, both in form and format. As I have stated elsewhere (Guljajeva and Canet 2011), "Ligeti's work is a relevant reference in terms of score composition and applying a mechanical object as a musical instrument." Apart from György Ligeti, there are a number of Neo-Dadaists and Fluxus artists, for instance, John Cage, Eric Andersen and others, who have explored novel forms of score and art in general. Chance was a vital artistic component that enabled the artists to treat an artwork as a field of possibilities and introduce unpredictability (Almenberg, 2010). Hence, it is possible to see the influences of these early works in my art practice that applies geo-located social data as a chance when composing the rhythm of the metronome. However, with "The Rhythm of City" artwork my intention was to go beyond the chance operations and add to it cultural, political and post-participative concept layers. Furthermore, by translating the virtual activity of digital inhabitants in real-time to the motion of a metronome, the artwork acts as a bridge connecting virtual and physical spaces manifesting networked society and information age. As Laszlo Moholy-Nagy puts it, "Art crystallizes the emotions of an age; art is mirror and voice. The art of our times has to be fundamental, precise, all-inclusive." (Borchardt-Hume et al. 2006: 74) Similarly put, by using the tools and language of today I aim to explore novel forms of artistic expression and participation, and thus, offer the audience the art of its time.

3.1.2 Indirect Post-Participation Component

As an artist I was extremely excited about the fact that one metronome is able to encapsulate a city's digital pace of life, which is composed of the digital inhabitants of this location in real-time. In this art project, I am looking at big data, which does not refer to user-generated content, but rather to the location and activity of users. In other words, how much people tweet, upload videos, photos and make check-ins. To put it clearly, the online participation and whatever activity in social media platforms and on the internet, in general, are monitored, analysed and archived. "One should not forget that the internet is owned privately." (Groys 2017:13) Quoting Pau Waelder, who looks into the concept behind my practice: "As the use of digital technology permeates our daily life and the routines that social media companies impose become an extension of our work or a mandatory leisure activity, being part of the global data flow is as commonplace as it is unquestioned. Every day, we share our activities, likes and thoughts on Facebook or Twitter, take photos with our mobile devices and post them on Flickr, tell others on Foursquare where we are located and participate in a myriad of other ways in the constant flow of information between servers that cover a large part of our planet." (Waelder 2013)

Technically speaking, social media services have their APIs that allow specific access to their users' data to third parties (so-called developers category). The fact is that this technology opens a door for various applications to make use of these data. Most of the business models of startups are based on the users' data acquired from different applications by mostly using APIs. Of course, the ones who produce data have no idea where and how the data are applied. Shoshana Zuboff describes such a paradigm as surveillance capitalism. In her words, "big-data is both a condition and expression" (Zuboff 2015). Moreover, Kristie Fisher and Scott Counts found the amount of social software usage comparable to the older media like books and television already in 2010.

Talking from an artist perspective, social media data are fascinating, political and concept-rich artistic material. What is more important is that they also help us look at and highlight a different participation model, which in this case is indirectly post-participative, since the users no longer have control over it and often have no knowledge about their participation. The indirect category is expressed by the fact that the artwork is not bound to the physical location of the exhibition but takes place on the territory of social media in the selected areas. To be more precise, since the post-participative input of "The Rhythm of City" does not share the exhibition space with the installation and its audience, it represents indirect post-participation.

To put it in even stronger terms, I believe that post-participation helps to summarise the big part of the post-digital era where we have fallen into the trap of big corporations that own the internet. In order to support my statement, I borrow here a quote by Shoshana Zoboff: "Dark Facebook, like Dark Google, stands tall in the lineup of new absolutist information powers who imagine their users as passive sheep so hungry for their services that we'll acquiesce to any manipulation." (Zoboff 2014) Also, Zoboff describes the net giants as a new absolute power that is hidden and unaccountable. In her earlier article in Frankfurter Allgemeine, Shoshana Zoboff writes about Dark Google and predicts the following: "Google transfers its radical politics from cyberspace to reality. It will earn its money by knowing, manipulating, controlling the reality and cutting it into the tiniest pieces." (Zoboff 2014) Nevertheless, it seems that society does not want to believe in these dark stories. Evgeny Morozov calls such a belief in the freedom of speech on the internet cyber-utopianism. "The idea that the Internet favors the oppressed rather than the oppressor is marred by what I call cyber-utopianism: a naive belief in the emancipatory nature of online communication that rests on a stubborn refusal to acknowledge its downside." (Morozov 2011: xiii)

If we leave critical views aside, the data sets of mass movement help us in "discovering interesting and useful patterns such as social/natural events or social customs/culture" (Fujisaka et al. 2010). This kind of research is enabled by the location and time stamp of posts. Taking these facts into account, I believe in having grounds to apply the geo-located social media data as an artistic material in tackling the issue of the urban pace of life. As Paul Virilio writes: "a virtual reality that dominates the reality while disturbing its own idea of 'reality'." (Virilio 1993: 129) Ultimately, through the practice I am exploring hybridisation of the spaces while drawing attention to the relationship of virtual and real, and not a transparent use of big data by different parties.

Coming back to the concept of indirect post-participation, "The Rhythm of City" illustrates how social media data can be applied as artistic material and how it enables artists to convert everyday online communication to unpredictable performance. In saying this, the installation offers a unique experience to its audience: it is possible to see and hear the cities' pace of life that is performed by ten metronomes. "The score is unpredictable and unique because the digital inhabitants are the composers of the score in real-time." (Guljajeva and Canet 2011) At the same time, the art project does not introduce any changes to the daily behaviour of social media. The artwork is related to online social activity, and hence, the audience in the exhibition space is not offered a chance to be part of the score composition of the artwork. Taking into account the characteristics of "The Rhythm of City", it is classified as an indirect post-participative art piece.

3.1.3 Realisation

To begin with the data sources, for the sake of the most accurate rhythm of cities, as many social media networks as possible are applied. However, limitations are set by geo-locality and access to each platform's API. In the current version of "The Rhythm of City" (2017), the data is retrieved from five different social media networks: Twitter, Flickr, Youtube, Foursquare and Instagram. Previous versions (before December 2012) were missing the last two social media platforms. Due to the constant improvement of the installation, there are several versions of it. First, the system allows for adding new social media services. Second, the locations are defined by longitude and latitude, and thus, places can be added, removed and modified. And finally, I have been working with different metronomes and hardware solutions in order to improve the performance of the artwork in the exhibition settings. The figure below visualises the technical setup of the artwork (Figure 9).

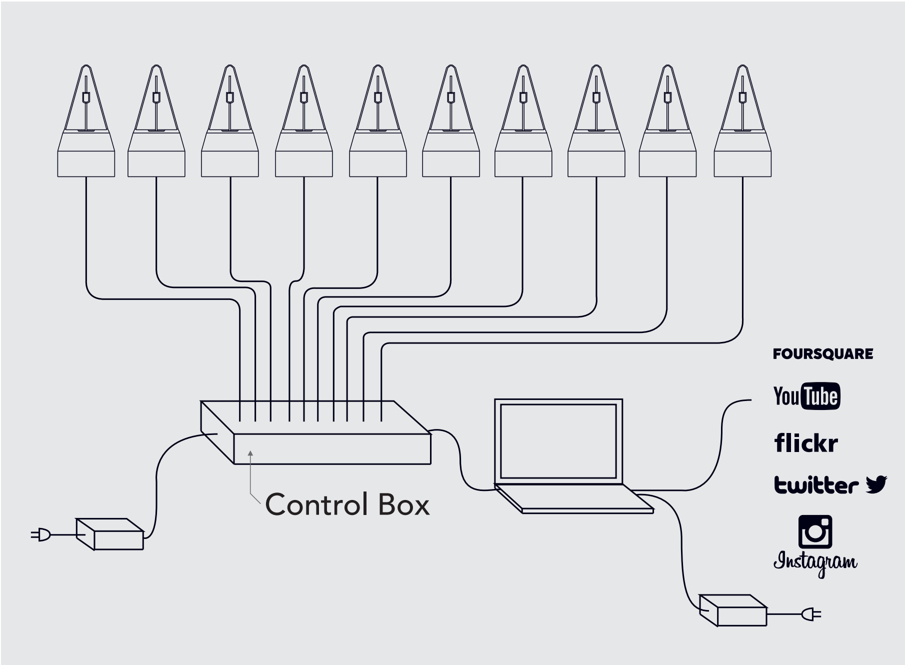

Figure 9: Technical setup of "The Rhythm of City".

Explaining the software part first, the cycle, which is depicted in Figure 10 illustrating the software architecture of the project, takes place every minute. The software robot developed in Python requests a number of new posts from the selected social networks filtered by the indicated locations and saves it to the database. Using Python programming language is more convenient in creating the web crawlers – software-based search robots (also known as web-spiders) that analyse the web according to a pre-defined target.

The database, which also stores historical data, is necessary for evaluating the current trend and normalising the data in order to understand whether a city is less or more active in relation to its average state. It is important to mention that the comparison is done within a city and not between the locations since my interest lies on the pace of life of each city individually. For example, it does not make much sense to compare New York City and Tallinn because the former will always display a higher activity on social networks than the latter. Thus, the rhythm of every city is compared to its historical data periodically. Technically speaking, the database is done in MySql, which stores the data collected from the web crawlers. Hence, the database stores all the information that is necessary to compose the rhythm of each metronome. After the data is quantified, it is returned to the Python application, which forwards the value of the current rhythm of each metronome to the hardware part of the installation every minute.

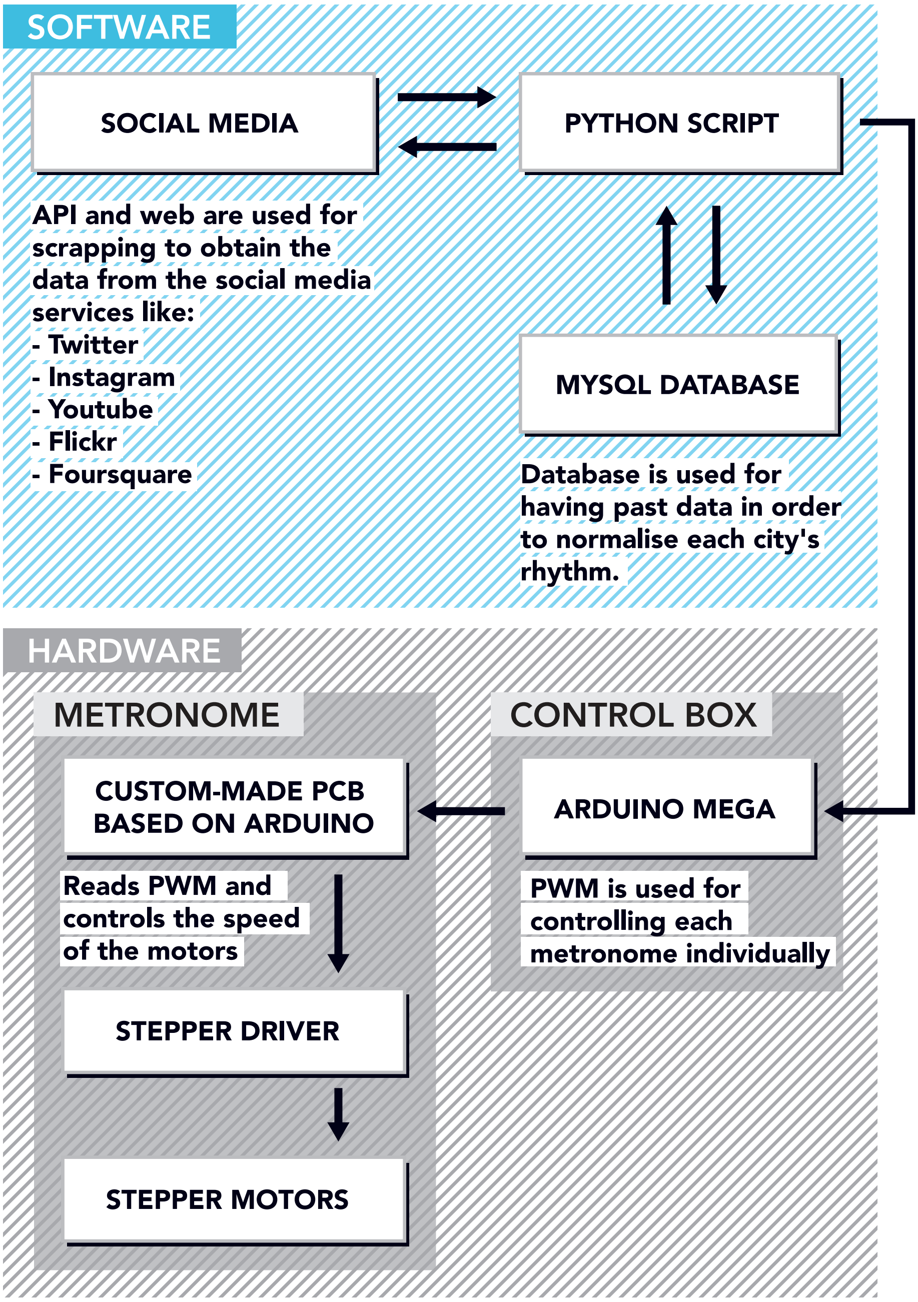

Figure 10: The software and hardware architecture of "The Rhythm of City".

When it comes to the electronic and physical realisation of the project, a ready-made Yamaha metronome was modified by extending its pendulum, which enabled me to control the metronome's speed with a stepper motor that sits below each metronome in the installation (Figure 11). The motor is controlled by a driver and an Arduino microcontroller. A controller is placed into each base of a metronome along with an engine and a driver, which communicates with the central controller to obtain the current rhythm. The microcontroller, which is integrated into the base of each metronome, is a standalone Arduino incorporated into the custom-made PCB board that accommodates the controller, driver and incoming signals (5V, ground, and PWM). The central Arduino forwards the values indicating current motor speed via PWM (pulse width modulation) pin to the standalone board. In turn, the main controller is connected to a computer in order to receive a score from 0 to 254 from the Python application, which represents the level of activity in the selected locations according to the real-time data pulled from the social media. Hence, the installation has 255 different speed modes, which correspond to the digital activity level of a place. The range is limited by the PWM pin, which is able to write or read values from 0 to 254.

Concerning the production of bases, they are custom-designed and laser cut from plexiglass. All the internal holders are also custom-designed and 3D-printed. The art installation exists in black and white versions.

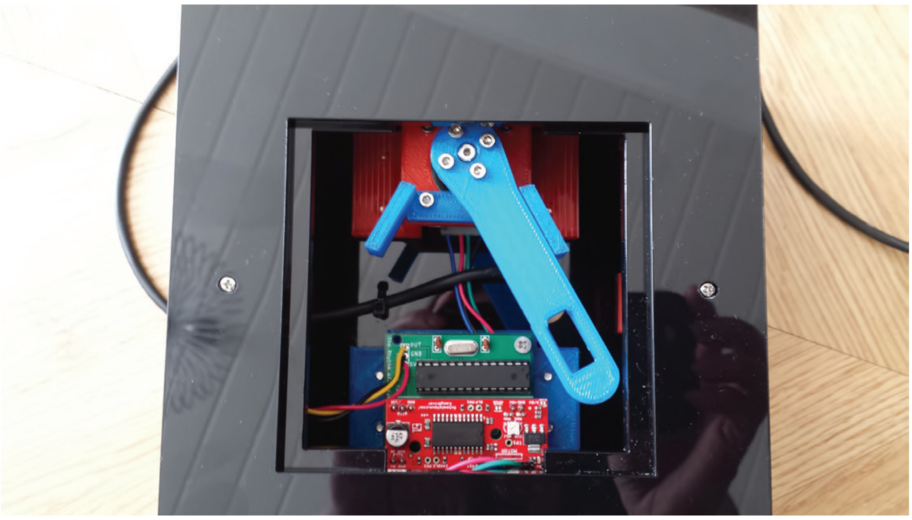

Figure 11: The base of the metronome that controls its speed according to the data instructed by the dedicated software.

Apart from the technical realisation, I have figured out the best way to display the artwork. When "The Rhythm of City" is shown, then the special furniture accommodating ten metronomes and the rest of technology is built (see Figure 12). The construction also has integrated light tubes that provide direct light from top to bottom, which results in no shadow cast by the metronomes.

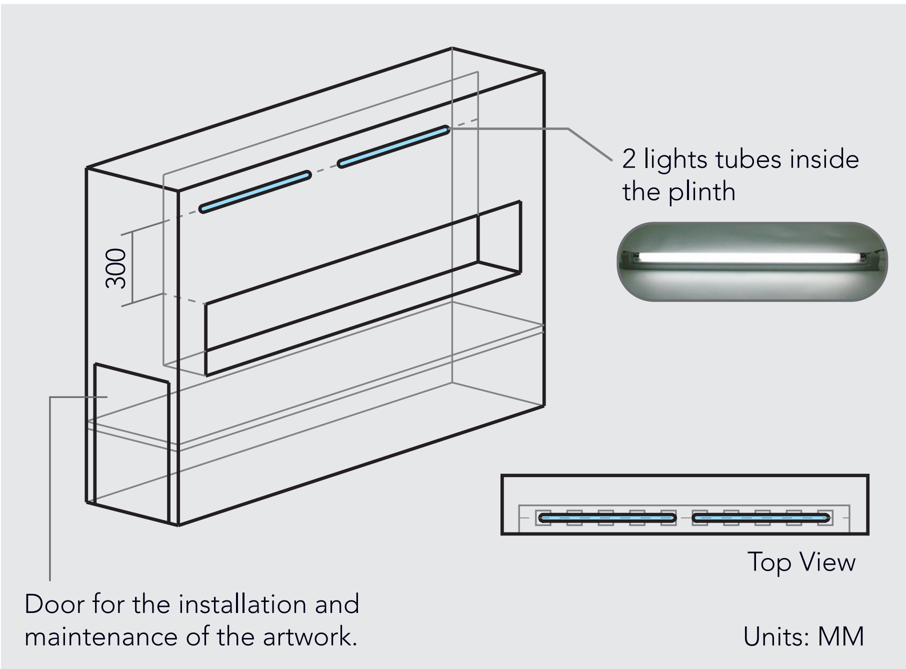

Figure 12: The furniture of "The Rhythm of City".

When it comes to the production trajectory, the first version of “The Rhythm of City” in 2010 was realised by using the Wittner metronomes and moving them with the servo motors. This version had two main problems. First, Wittner metronomes are entirely mechanical, and thus, one needs to wind the spring approximately every half an hour. And second, a servo motor is not designed for continuous work, so the components may burn if forced to be permanently active. In short, the first version of the installation was not meant to work uninterruptedly, and thus, it was quite challenging to exhibit.

In 2011, Wittner metronomes were replaced by Yamaha hybrid ones, which produced sound electronically and had no spring system. This modification allowed for a continuous performance of the installation. In 2014, the servo motors were changed to steppers and the whole electronic part, apart from the main controller, was newly developed. These improvements helped to have a robust artwork that can be exhibited for a long time.

Considering the future development of this piece, I see the need to replace the metronomes once again because Yamaha has discontinued production of this particular metronome model. This means that, if a metronome breaks, there is no replacement. Therefore, currently, I am developing a metronome that is designed and produced entirely by Mar Canet and me, which allows for preserving the artwork and creating an edition of 10 as initially planned.

3.2 The Rhythm of São Paulo

"The Rhythm of São Paulo"[9] (2012) follows the concept of "The Rhythm of City", but has a different medium and tackles only the digital pace of life in São Paulo. In the framework of the SP_Urban Digital Festival 2012 I had a chance to scale up the work in its physical dimensions, while also narrowing it down to a single city.

3.2.1 Concept and Inspiration

Concerning the form and medium, the artwork was specially created for the FIESPI building located in the heart of São Paulo, which was built in 1979 by Rino Levi Arquitetos Associados.[10] The building has a pyramidal shape that reminded me of a metronome, and thus, gave me an idea for the artwork. Since 2012, FIESPI has a media facade on its three sides that face Paulista Avenue, which was specially installed for artistic interventions. The media skin is controllable in real-time, has relatively low-resolution and has a uniquely shaped

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9 The artwork was displayed in São Paulo twice: during the SP_Urban Digital Festival curated by Marilia Pasculi and Susa Pop in 2012 and São Paulo City's Anniversary Celebration in 2013.

10 http://www.fiesp.com.br/sobre-a-fiesp/edificio-da-fiesp (accessed 3 January 2018).

screen (two triangles and one trapezium). As Waelder describes the dimension of the work, "[t]he media façade of the trapezoidal FIESP building in São Paulo displays the image of a metronome, its pendulum swiftly swinging back and forth across the enormous digital screen, made of more than a hundred thousand LED lamps. In fact, due to its particular shape, the whole building resembles a large metronome. The scale of the device matches its purpose: it is responding to the tempo of the city of São Paulo (Brazil), as expressed in the interactions of its citizens in social networks and popular websites." (Waelder 2013: 42)

The urban media installation creates a bridge between city life in the physical and virtual spaces. Suddenly, the inhabitants of São Paulo were offered a new kind of relationship with the city by allowing them to be part of the artwork displayed on the FIESPI media facade (see Figure 13). At the same time, the installation mirrors the online presence of inhabitants and the amount of invisible real-time social data fluctuating in the air. Furthermore, Pau Waelder in his article on "The Rhythm of São Paulo" highlights the vanishing border between virtual and real space and the integration of online presence into an everyday routine. Geert Lovink argues that rather than the virtual, the real in fact becomes more virtual: "…it wants to penetrate and map out our real lives and social relationships." (Lovink 2011: 13) In other words, the elements of virtual spaces become gradually more integrated into the physical space and object, and thus, merge with our daily life in general. When analysing "The Rhythm of São Paulo", Waelder draws on the Lovink's thought as following: "The virtual metronome in the FIESPI building is thus as real as any instrument measuring the temperature, atmospheric pressure or air pollution in the city. It measures the need for being connected. The pendulum swings faster as the data traffic increases, denoting an increase in tempo and providing a visual indicator of Paulistas' information anxiety." (Waelder 2013: 42–43)

I believe the artwork demonstrates the evolution of a clock tower that is usually in the central square of a city. The difference is that people do not look up at it to check the time, but to understand the current rhythm of the city in its digital dimension. "The Rhythm of São Paulo" offers its inhabitants a new relationship with the place because everyone understands that they are part of the artwork, since the score is composed in real-time by social media users located in this city.

Figure 13: "The Rhythm of São Paulo" by Varvara & Mar in the FIESPI building during the SP_Urban Digital Festival 2012.

3.2.2 Indirect Post-Participation Component

The indirect post-participative input of "The Rhythm of São Paulo" comes from the geo-locative social media, as in the case of "The Rhythm of City". Moreover, the projects are relatively similar in terms of concept and post-participation component. Both apply geo-located social media as an artistic material, which acts as the indirect post-participative input. The audience, therefore, is left only with the contemplative role of enjoying the real-time output of the interactive system.

As in "The Rhythm of City", the system selects the activity of social media users, and not the content. In other words, the real-time tweets, photo and video uploads, and check-ins within the São Paulo space are converted into a post-participative input for the interactive system of the artwork. And the audience can enjoy the output of the installation: the huge pendulum of the media facade ticking along with the digital rhythm of the city. Hence, "The Rhythm of São Paulo" acts as a large-scale interface for perceiving the digital pace of life in São Paulo.

The difference is the scale of the artwork and the location. By the scale, I mean the range of post-participative input. While "The Rhythm of City" draws on the social media activity from 10 different cities, "The Rhythm of São Paulo" does the same, but only from one city – São Paulo. Since the location of the art installation and the origin of the post-participative input is the same, one could argue about the classification of the artwork as indirect post-participation. The main reason for describing "The Rhythm of São Paulo" as indirectly post-participative is the fact that the artwork is not scanning for the input surrounding it but rather the whole social media network in São Paulo. Hence, for audience participants, it is impossible to notice their feedback on the artwork. At the same time, the artwork offers the audience the unique chance to perceive the layer of communication and activity of the urban space, which is otherwise invisible. Also, it visualises the data tracking and collection by the big corporations, and thus, brings the problematics of dataveillance on the street.

To sum up, "The Rhythm of São Paulo" is an indirect post-participative media facade installation that makes use of geo-located social media data from Twitter, Flickr, Youtube, and Foursquare, and thus, requires no direct audience interaction. The artwork applies social media activity in São Paulo as a score and introduces no interference to the daily behaviour of the local users. The animation of the art piece is affected by the real-time data that local people generate while being active on social media as a regular daily activity. In short, the installation reflects upon and mirrors São Paulo's digital pace of life.

3.2.3 Realisation

Realisation-wise, new software was developed that was able to communicate with the media facade. The part of data scraping is adapted from "The Rhythm of City" project: applying the APIs of Twitter, Flickr, Youtube and Foursquare. Since the development process of this part is the same as in "The Rhythm of City", which is explained in the previous chapter, I will not describe it here. The difference is in the number of locations. For "The Rhythm of São Paulo", it is necessary to ask only for the data of São Paulo each minute.

In "The Rhythm of São Paulo" no custom-made electronics were used; instead, graphics and screen-capture software communicated with the facade control system. In other words, the physical metronomes were replaced with the architecture containing an interactive media facade. Hence, the graphics and real-time animation were especially created for this installation.

The artwork was displayed across the three faces of the building. For this reason, the mapping system needed to be developed accordingly. The pyramidal shape of the architecture is represented by using three unfolded

2D geometry shapes in the software (see Figure 14). The rendering in openFrameworks was based on the specially developed SVG template file. This template contains all the LED pixels of the facade, which are mapped with the corresponding rectangles in the image of the software. This strategy of translation was used because a computer screen has a much higher resolution than that of the media facade. Hence, this strategy enabled me to change the LED colour of the media architecture at the right moment and place.

Every frame of the virtual metronome image is rendered by a dedicated software and saved as SVG shapes. These shapes are then used for changing the colour of the LED facade pixel by pixel, and thus, the illusion of pendulum moving back and forth is created. By the same logic, the speed of the metronome is also controlled.

Another challenge was the calibration of the LED facade colours of the installation, since the colours of the facade can be very different from the colours of the computer screen. In the end, the colours used were calibrated with the help of outdoor Wi-Fi, which allowed the LED colours on the facade and a computer screen to be shown simultaneously. Hence, the desired intensities of LED pixels could be selected.

In short, the openFrameworks program rendered the image in the computer screen, which is then captured by the screen capture system and forwarded to the application responsible for controlling the facade (see Figure 14). The layout of the graphical part has to align with the media façade of the building. In other words, two triangles are side by side on the screen with a rectangle in the middle, and in reality, one sees the pendulum moving over the three sides of the building.

Figure 14: The process of screen capture in the facade control room of the FIESPI building.

3.3 Baltic Sea Radio

"Baltic Sea Radio"[11] (2012) offers a sonic component to the discourse and, what is more important, it expands the concept of indirect post-participation by exploring further than social media data. To be more precise, the artwork uses a particular device for receiving real-time marine data in its range. Hence, the score of installation is composed by the activity of local boats.

Moreover, as the name suggests, the artwork has an online radio component in addition to the gallery exhibit and a scanning spot on the coastline where the radar is installed. Hence, the artwork spreads over three different spaces. However, the scanning location is not accessible to the audience. The concept of artwork, its realisation, the importance in the context of indirect post-participation and related artworks are discussed below.

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11 In 2012 "Baltic Sea Radio" received the Baltic Goes Digital award and was produced as a site-specific installation in Gdansk and its neighbourhood. The "Baltic Goes Digital" exhibition took place at Gdansk City Gallery (14 September – 4 November 2012). After the exhibition, the work remained in the collection of Gdansk City Gallery.

As mentioned previously, "Flux of Sea" was exhibited in 2011 in the form of a sound performance at Es Baluard Museum of Modern and Contemporary Art in Palma (9 December 2011) and at the CRIDA artist-in-residency show in the same year.

3.3.1 Concept and Inspiration

"Baltic Sea Radio" has grown out from the previous artwork titled "Flux of Sea", which was realised while in the CRIDA artist-in-residency[12] programme curated by Pau Waelder and Fernando Gómez de la Cuesta in Palma de Mallorca (Nov–Dec 2011). Hence, it is worth discussing the initial idea and inspiration for "Flux of Sea" (2011) and follow the trajectory of artistic creation and thinking.

With the "Flux of Sea" project, I began my interest in marine traffic as an artistic material and its application as a score. The art project was presented in two parts. The first was a real-time open-air sound performance at Es Baluard Museum of Modern and Contemporary Art in Palma (9 December 2011) (see Figure 15). The second was an exhibition at CRIDA where the silk prints of "Flux of Sea" were displayed in addition to the real-time sound piece. However, I find the sound performance at Es Baluard Museum of Modern and Contemporary Art more complete than the exhibit at the CRIDA show, due to the location. In comparison to the studio space, the museum is closer to the sea and has no obstacles for the radio waves to be received.

12 https://curatoria.org/2013/01/08/crida (accessed 3 April 2018).

Figure 15: The open-air sound performance "Flux of Sea" by Varvara & Mar at Es Baluard Museum of Modern and Contemporary Art in Palma (9 December 2011).

Talking about the concept, the work is site specific and emphasises the fact that Mallorca is an island and has a strong relation with the sea. Hence, marine traffic is something that could be used for describing the local life and its pace. According to the fact that every boat exceeding specific dimensions has to communicate with others and the harbour via radio signals, I saw a way of getting ships in Palma Bay to participate in the art piece in real-time. In short, current operational marine vehicles that are within reach of the dedicated radar of the project are the unaware actors and the score of the sound installation that is composed instantly. In a way, the audience is invited to listen to the invisible voices of the sea. I would like to emphasise that the sound installation contains a unique sound piece that is always different. It means the audience will be offered a new sound experience every time that forwards the current flux of the sea.

In addition to the sonic installation, while in the residency I also produced a series of silk prints that were generated from the marine data collected during 24h. Hence, the data from Palma Bay was once again applied as an artistic material when creating visuals for the silk prints. One can see the number of boats and the radio signals they have emitted during the tracking time (see Figure 16).

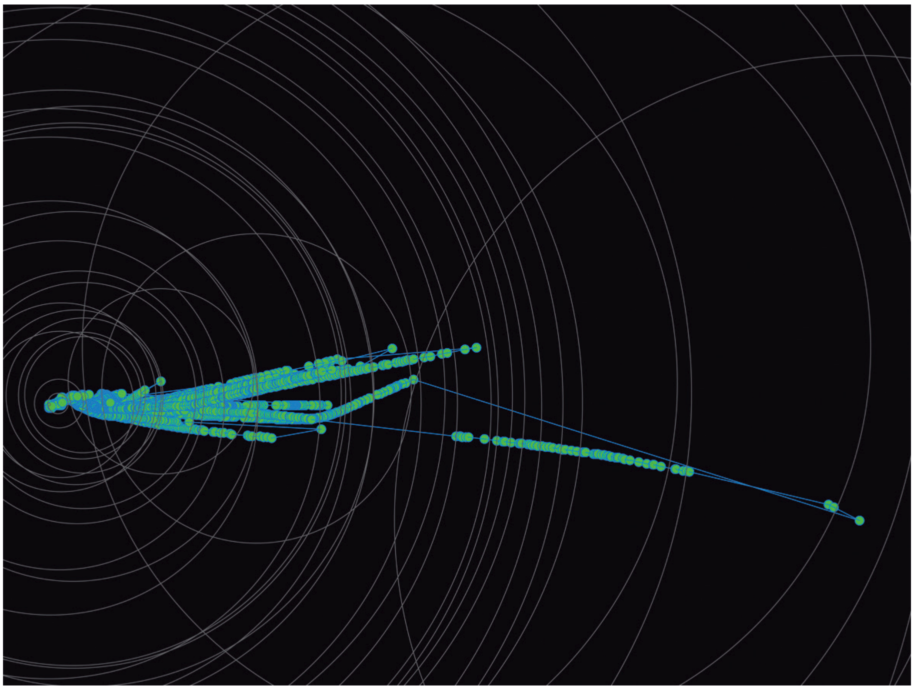

Figure 16: One of the visuals used for the silk prints of "Flux of Sea".

When it comes to "Baltic Sea Radio", although it draws on the same concept as "Flux of Sea", the artwork further demonstrates research on the topic, the visual component of the installation and the interplay of spaces that involves the artwork. In addition, the sound composition's complexity was extended in the project. Also the number of places that needed to communicate between each other added complexity to the work.

Coming back to the artistic idea of "Baltic Sea Radio", the art project applies the marine traffic of Baltic Sea for creative purposes and offers a novel sonic experience to the audience. The artwork reflects the movements of local ships in real-time and applies marine traffic as a score of the sound composition. At the same time, "Baltic Sea Radio" converts the routine of every day into a continuous performance and adds artistic meaning to the data floating in the air.

To be more precise, the boats that can be reached by the AIS-receiver, which is installed in Sopot, right on the coastline of Baltic Sea, are affecting and determining the score of the sound work in real-time. Hence, control over the sound composition is forwarded to marine data. In other words, the sound work is in constant flux and relates to the current activity of Gdansk Bay. It means one could listen to the voice of the local sea, and imagine the movement and life of it. Thus, the artwork aims to draw on everyday life and invite the audience to rediscover reality in an unusual way. In quoting Pau Waelder, who has underlined the essence and beauty of the artwork's concept: "It implies a re-contextualization of an everyday activity, which acquires an additional meaning while not being altered by the fact that it is integrated into the artwork. In this case, the maritime traffic is not affected by the sound installation, while it is, at the same time, transformed from a daily activity into an artistic performance." (Waelder 2014: 179)

The jury of the Baltic Goes Digital art contest, part of the Art Line project, described "Baltic Sea Radio" as follows: "In the project there is an exciting mixture and a dialogue between well-known media, like radar and radio, combined with opportunities offered by geopositioning and the use of internet. What distinguished the project is the idea of drawing a parallel between marine and city traffic and a presentation of Baltic cities being networked via ships. Baltic Sea Radio makes the fascinating yet hermetic world of sea communication accessible to everyone." (Bigos et al. 2013: 5)

To be more precise, "Baltic Sea Radio" goes beyond gallery space. It expands over three spaces: the receiving station on the coast of Gdansk Bay, the listening and visual installation in the gallery and virtual space in the form of an online radio stream. Hence, the work cannot be seen as simply a sonic one because it interconnects different locations and has visual and experiential elements besides a sonic part. It is important to mention that as a visual artist I have approached sound as a visual material and tried to give textural properties to the composition elements. Furthermore, I am not talking about the sonification of marine data. The data of radar do not correspond one-to-one to the specific parameters in the software, but rather determine the score, the characteristics and the activity of used sonic textures or sound instruments created in the PureData program.

Regarding visual appearance in the gallery space, the audience is invited to take a seat in the half-boat and experience the real-time composition of "Baltic Sea Radio" (see Figure 17). The listening station is made out of an old fishing boat that was cut into two pieces, and equipped with a seat, computer and headphones. The aim is to create a visual and emotional connection with the concept of the project. The boat, which originates from the region, creates an intimate shelter where spectators are able to become mentally transported to the local coastline and re-imagine it from the sonic perspective. At the same time, the sculptural installation in the gallery space balances the complex high-tech behind the realisation of the artwork. Furthermore, the online broadcast of the artwork enables everyone to access and to "listen to the real-time composition in a different location, providing a way to experience the maritime traffic as sound" (Waelder 2014: 178). Ultimately, "Baltic Sea Radio" demonstrates a poetical approach to the data- and the signal-driven world.

Figure 17: "Baltic Sea Radio" by Varvara & Mar installation at the Gdansk City Gallery in 2012.

3.3.2 Indirect Post-Participation Component

When it comes to post-participation, the element of this is fulfilled by the ships that continue their routine trajectory as usual without knowing that they are participating in an artwork. For me, it was for the first time working with radar technology and thinking about sound as a visual, textural element. Hence, the work has an experimental and explorative nature in the context of my practice.

Although “Baltic Sea Radio” is an indirectly post-participative work, as are “The Rhythm of City” and “The Rhythm of São Paulo”, it contributes a new aspect to this category and my thinking. The artistic material does not originate from social media or any other online data source but rather comes from a dedicated external device installed in a specific location for obtaining the data. As Waelder underlines, we should not overlook the fact that the data is not “an abstract entity but the output of billions of actions carried out by people almost everywhere in the world” (Waelder 2014: 178). Hence, “…if the collected data is related to a particular location and a certain human activity, we can avoid the impression of simply observing an infinite array of numbers and network packets. Data becomes information when it has a meaning, and as such, it can be integrated into an artwork.” (Waelder 2014: 178)

Drawing on that, I am not talking about data out of context, rather as a vital component of the artwork that completes it. It is important to note that an indirect post-participative artwork does not introduce any changes to the participants’ behaviour and daily rhythm but instead converts a component of everyday life to artistic performance. In the case of “Baltic Sea Radio”, the active boats in the local bay become the notes and textures of the sound work. As mentioned above, an indirect post-participative artwork does not share the same physical space with its audience. And thus, the chance to enjoy and influence the work is nearly zero. The disconnection of exhibition and scanning spaces was due to the reach limitations of the AIS radar, which in the end introduced the inter-connectivity of stations via a network.

Waelder sees the post-participative nature of the art project as “the fusion of art and life” that is enriching the art piece in a unidirectional sense by allowing the audience to observe every day in real-time. He continues: “This observation is carried out by means of a détournement of the data flows, that allows the data to simultaneously serve its original purpose (here, to locate ships at all times and prevent them from colliding) while providing an input to the participatory artwork.” (Waelder 2014) Waelder admits that selecting data without the user being necessarily consciousness is somewhat similar to surveillance. “And while it is true, as Boris Groys (2013) states, that ‘the internet is by its essence a machine of surveillance’, it must be pointed out that it is not the specific action of one person that is being traced, but the activity as a whole, which generates and modifies a certain output. In this sense, ‘Baltic Sea Radio’ provides a new form of experiencing the constant coming and going of ships at the port, not focusing on the vessels themselves but on the ‘life’ that is happening, at that moment, on the sea front of Gdańsk.” (Waelder 2014)

In conclusion, “Baltic Sea Radio” is an indirectly post-participative art installation that applies local marine traffic as a post-participative input. Hence, the artwork incorporates a real-life component into the artistic performance, which is the marine traffic in Sopot. The art installation interconnects three different spaces and offers its audience a sonic experience that is in constant flux. “Baltic Sea Radio” underlines how indirect post-participation can be realised by an external device, which in this case is an AIS radar that listens to the active boats in the area.

3.3.3 Realisation

In explaining the art project spatially, there is the exhibition space, where the listening station is displayed, the scanning spot, where the radar is installed, and the online space, over which the radio is broadcast to the wider audience (see Figure 18). The gallery space and the scanning spot are connected to the internet in order to receive marine data by the installation and apply that as a score. It is important to mention that the data connection is unidirectional. This means that the listening station waits for the data from the scanning spot, and the online radio broadcast takes place in the exhibition space.

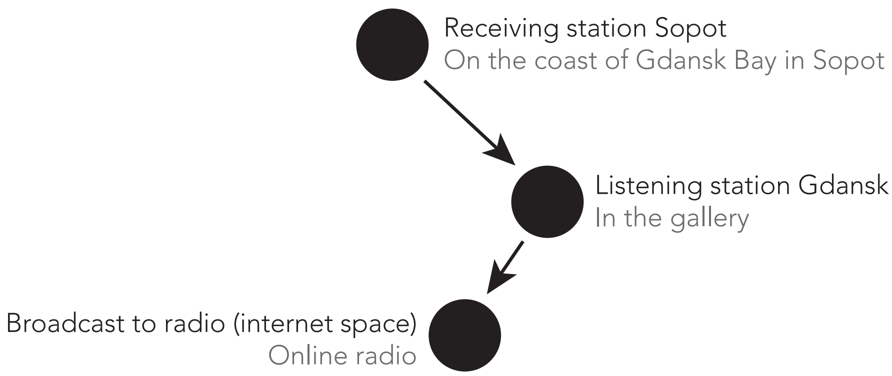

Figure 18: The space dimensions of "Baltic Sea Radio".

When it comes to marine data, every ship and middle-size boat has its own name and is obligated to have a radar that can emit a marine vehicle's title (unique indication), position, course and speed. The project applies an AIS-2-USB radar, which is available on the market and is able to track all reachable activity within the area of local sea coast. With the device, it is possible to obtain the names of boats and their position in the reachable field of radar, which is about 50 nautical miles. The communication between marine radars is crucial for safe traffic and its regulation on the sea. Hence, we are talking about data that is usually invisible and unknown to the wider public but yet vital, accessible and open.

To elaborate, the data coming from the radar needs to be decrypted, which is done with a dedicated library in Processing. Then the system forwards via OSC the relevant data, which for me are a unique indication, position, course and speed, to the Pure Data program that is responsible for the sound composition. In short, the data act as the actors in the sonic installation. The frames of the composition are composed and freedom to act for incoming data pre-programmed. Thus, when the marine traffic data are received, the flux of sound piece begins. In other words, the computer in the scanning spot receives, decrypts and forwards the data to the second computer that is located in the exhibition space in Gdansk City Gallery. The listening station is also the place where the real-time sound composition is generated. The sound work uses Pure Data software for electronic sound composition purposes and also for receiving decoded marine data from the other machine and broadcasting Baltic Sea Radio online (see Figure 19). Thus, the data is used for the purpose of real-time score composition, which offers a novel sonic experience to the audience. The sound piece is in constant flux, unique and unpredictable. Moreover, the work goes beyond chance-based composition by reflecting on the current traffic of the sea.

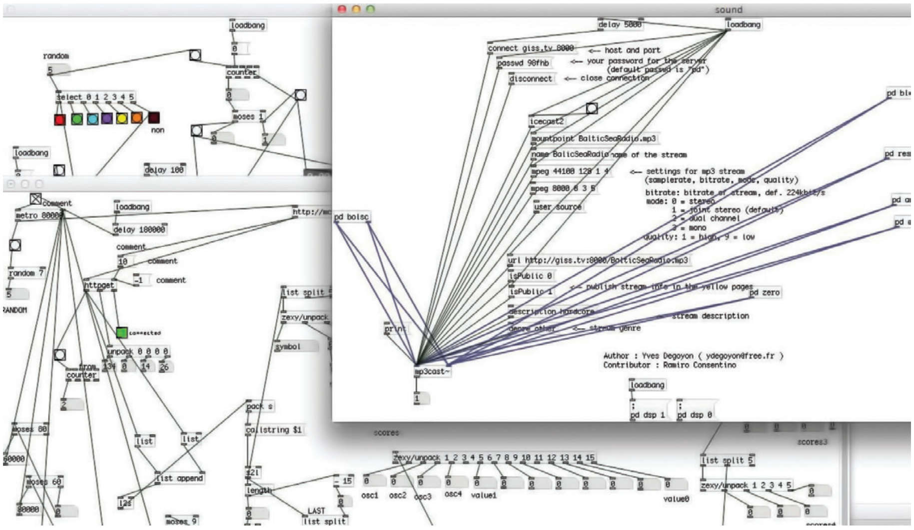

Figure 19: A screenshot of the Pure Data patch for the "Baltic Sea Radio".

3.4 Related Artworks and Discussion

Before describing related artworks by other artists, I would like to draw attention to two artworks of mine, “Speed of Markets” (2014) and “Wifipedia” (2015), which are indicated as related works to indirect post-participation in the practice timeline (see Appendix 1).

Starting with “Speed of Markets”, the seven metronomes follow the tempo of stock markets in real-time (Figure 20). When a stock market opens, and trading begins, a metronome starts to tick in its rhythm. When a stock market closes, a metronome stops, too. Hence, the art installation follows the pace of the seven biggest stock exchanges: NYSE, NASDAQ, JAPAN exchange group, Euronext, London Stock exchange, Hong Kong Exchange and Deutsche Börse. To be more precise, the volume of markets, which forwards its liquidity, dictates the score of the art installation. Dominique Moulon wrote the following about the artwork: “The sculptural part of Varvara & Mar’s installation, its materiality, is essential here. For it gives shape to the organised chaos – or disorganised, depending – of the financial markets in the era of their extreme dematerialisation. The very sound of the installation beats several measures at once, amplifying the chaotic aspect of the financial markets, which nevertheless act in the greatest silence.” (Moulon 2018: 159)

The reason for not being described as an indirect post-participative artwork is the input. Since the data of stock markets are largely generated or determined by machines and algorithms, and not humans, I felt it was not sufficient argumentation for post-participation, which requires human or animal passive participation. However, the relation with indirect post-participation is there. The artwork uses the data of stock markets in real-time as a score that completes the artwork and forwards the flux of the financial world to the audience.

Figure 20: "Speed of Markets" (2014) by Varvara & Mar.

When it comes to "Wifipedia", it is a publication that contains the local Wi-Fi networks' names along with their GPS location, channel number and accuracy. The book was composed by conducting numerous scanning trips in Tallinn and capturing the network data by a custom-made application. The art project underlines the digital landscape of the city and invisible communication and creativity layer of its inhabitants. People tend to personalise their Wi-Fis; they try to be creative, communicate with the neighbours or express their opinion (usually politically). Hence, the 32-character-space for naming a Wi-Fi network has, in a way, become a location-specific mini Twitter. Ultimately, the phone-book-like publication is to a large extent composed by people who have renamed their router. By analysing the participation element in this artwork, the participants are not aware of their involvement in the publication. At the same time, such participation did not take place in real-time and is also not continuous (one renames his/her counter once in a while); therefore, I decided not to define “Wifipedia” as a post-participative artwork, although it has a strong relation to its concept.

The artworks described below are selected based on a single criterion: the demonstration of indirect post-participation. In other words, the participative element of the artwork and its audience do not share the same space. It means an indirectly post-participative art piece takes no input from the exhibition space. The real-time input comes either from online or at a certain distance that is out of the sight of the audience. The political nature of the works was secondary when choosing, though it was not dismissed entirely. Below are just a few examples that I felt can illustrate indirect post-participation and largely relate to my work presented in this chapter.

Since “Listening Post” (2001) by Mark Hansen and Ben Rubin is already discussed in detail in explaining the table comparing participative, interactive and post-participative artworks, here I would like simply to stress its relevance in regard to indirect post-participation. The input for the interactive system of “Listening Post” are the users of 5,000 forums and blogs, who are not physically present in the exhibition at the same time. Hence, the artwork demonstrates a disconnection between its input and the audience, which is the precondition for the indirect post-participation. In other words, a spectator cannot influence the artwork in any way.

Another well-known artist in interactive art is David Rokeby who has been using video as a creative medium and voyeurism as a conceptual departure point from the early 1990s (Rokeby 2010) in works such as "Watch" (1995–2008). By separating moving from still parts in the camera image, the artist is able to play with the image layers and filter out humans, which enables him to confront the audience with the problematics of surveillance. In the words of the artist: "In 'Watch', public sections of the exhibition gallery or of exterior public space, separate from my installation, are watched by surveillance cameras. These images are processed in real-time and projected onto the wall of the installation space." (Rokeby 2010) The observing and being observed are the conceptual parts of the art installation. "Watch" demonstrates the separation between the space that is watched and the gallery space where the other is observed by the audience, which is one of the characteristics of indirect post-participation. Of course, people, who are monitored, and thus, integrated into the artwork have no idea about their role, which is another requirement of the term introduced. Hence, "Watch" (1995–2008) by David Rokeby can be described as indirectly post-participative artwork.

Christopher Baker (2009) describes his related artwork "Murmur Study" as a "live Twitter visualisation and archive". The installation monitors Twitter for new tweets "containing hundreds of variations on words such as argh, meh, grrrr, oooo, ewww, and hmph" (Baker 2009) (see Figure 21). The 30 thermal printers are printing out these messages in real-time, and, thus, creating a metaphorical cascade of tweets. The artist aims to point out that the messages that look like small talk are constantly monitored and archived by big corporations. In his words: "…while the future of these archives remains to be seen, the sheer volume of publicly accessible personal – often emotional – expression should give us pause." (Baker 2009)

When it comes to the indirect post-participation, people continue their regular tweeting as they are used to doing; the interesting thing is that this aspect of everyday life is incorporated into the artwork and routine tweeting becomes a piece of art. Thus, without being aware, it is us, who are on Twitter and happen to use certain words, who complete the "Murmur Study" installation. Of course, the audience is able to participate on purpose; however, the artistic concept talks about the integration of everyday communication into an art piece. And thus, since the post-participative input is not attached to the exhibition space, the artwork can be described as indirectly post-participative.

Figure 21: "Murmur Study" (2009) by Christopher Baker. Courtesy of the artist.

Another example is "PoliceState" (2003) by Jonah Brucker-Cohen, which strongly tackles the surveillance issue. To be more precise, the artistic idea is to reverse the surveillance carried out by the government. The installation consists of 20 radio-controlled toy police cars that move based on incoming data related to terrorism (see Figure 22). In the artist's words: "…the police become puppets of their own surveillance. This signifies a reversal of the control of information appropriated by police by using the same information to control them. Carnivore is the third incarnation of surveillance software such as Etherpeek and Omnivore created by the FBI to snoop data (email, urls, Instant Messages, etc) sent through ISPs. Despite the FBI's justification that using Carnivore advances the war on domestic and foreign terrorism, its use has unearthed many questions regarding its constitutionality. Infringements on personal privacy, free speech, Internet regulation, and the formulation of Echelon – a parsing agent for suspicious words, all bring Carnivore's existence into question." (Brucher-Cohen 2003) "PoliceState" is an intriguing art piece that underlines surveillance on the internet and turns it into a ludic installation. Hence, a real-time contemplation is presented to the audience on how we are always watched and how for one particular user's content, defined as critical by the system, the artwork becomes alerted and moves the police cars accordingly. Hence, the indirect post-participation element in this artwork is the users of the local network, who are tracked by the interactive system of the artwork, which is programmed to react in a certain way when specific data are encountered. Again, the indirect post-participative input is separated from the audience, and thus, the artwork is valid for illustrating the concept.

Figure 22: "PoliceState" (2003) by Jonah Brucker-Cohen. Courtesy of the artist.

Concerning the software used in "PoliceState", CarnivorePE was developed by Radical Software Group (RSG) in 2001 immediately after the 9/11 terrorist act in the United States. Carnivore is an Ethernet package sniffing software used by the FBI, which created much speculation following the 9/11 event about it being installed in many Internet Service Providers' networks, like AOL and Hotmail. Hence, in order to create a critical discourse about online surveillance, RSG released an open source software CarnivorePE and later also a Processing library Carnivore that enabled creatives and activists to use the same tool as the state but without pre-set keywords and other parameters that are used by the FBI. In other words, through reverse engineering, this particular piece of software has expanded the creativity of many artists and opened up the data sniffing topic to a wider discussion. The Carnivore Packet sniffing system was developed for non-expert users with an aim of introducing "'the third' way for data surveillance that is neither threatening nor liberating" (Galloway 2006).

Finally, I would like to discuss the art installation "Urban Mood" by Mahir M. Yavuz (2010) (see Figure 23). Yavuz uses geo-located tweets of Istanbul and analyses and summarises each post in a single word in order to describe the mood of the city in real-time. The work is a floor projection that displays in colour, sound and words the current city's emotional state. The artist describes his work as follows: "…through this keyword, the source tweets will create a typographic animation on the floor of the room, while colors and sounds will change to suit the content of the keyword. By sharing their thoughts on Twitter, every İstanbulian becomes a part of this mood production." (Yavuz 2010)

The quote shows that the artist is aware of the fact that the whole local Twitter community is composing his artwork, and thus, Yavuz uses these data as artistic material. Speaking in the language of the research topic, I can again point out that "Urban Mood" art installation applies the post-participative strategies by including digital inhabitants' everyday online activity and content into the artwork. To be more specific, "Urban Moods" demonstrates indirect post-participation qualities, since, similarly to "The Rhythm of São Paulo", its input does not originate from the exhibition space but rather the entire city of Istanbul.

Figure 23: "Urban Mood" (2010) by Mahir M. Yavuz. Courtesy of the artist.

To sum up, social media and the whole surveillance capitalism phenomena have been an enormous working material and inspiration source for many artists. It could be seen that Twitter is widely applied to describe a mood, location, communication, surveillance and more. Often one social media network stands for the cyber world as a whole in an artwork. I suspect the reason is in the access. Twitter provides an API for developers that enables multiple data aggregations and searches. In comparison to other platforms, such as Facebook, Twitter allows data access in various parameters. However, there are other examples of related artworks, like "Listening Post" and "PoliceState", that demonstrate indirect post-participation and use the different data sources from social media. "Watch" by David Rokeby is another example, as this applies a real-time processed video stream.

3.5 Conclusions

Through "The Rhythm of City" artwork and artistic process I began seeing a different kind of participation method, which is described as indirect post-participation in the thesis. Since the work fails to offer its audience any interactive or participative component, except contemplation, it seemed not right to refer to the work as being either interactive or participative. As already mentioned, the art piece makes use of geo-located social data and, thus, describes the digital pace of life of a city. The digital inhabitants of a place compose the score in real-time. "The Rhythm of City" is an indirectly post-participative artwork because it is completed by the activity of social media users, who have no control or idea of their role in the installation. Moreover, the artwork has no connection with the space in which it is exhibited. On the other hand, the artwork's post-participative element underlines the surveillance and privatisation issues of the internet.

Furthermore, "The Rhythm of City" and "The Rhythm of São Paulo" highlight the vanishing border between virtual and physical, and allow us to re-think urban space through the eyes of the digital pace of life. While "The Rhythm of City" addresses through ten metronomes in ten different cities, "The Rhythm of São Paulo" mirrors only one location's pace of life. Also "Baltic Sea Radio" is bound to a specific location, which is determined by the AIS radar tracking local marine traffic. Nevertheless, both art projects represent indirect post-participation, since the audience in the exhibition place is not offered any way to become the post-participative input of the installation. Ultimately, all three artworks provide a unique experience to their audiences by embedding a real-time element of life into their visual and sonic appearance.

The related artworks introduced in this chapter demonstrate the same characteristics as the discussed artworks of mine: an indirect post-participative input that is disconnected from the exhibition space and forms a part of the interactive system. Hence, the audience is given a passive and contemplative role.

As I stressed previously, "a significant amount of artworks that exist in hybrid space constitutes the increasing interest towards digital culture and possibilities of the real-time and location-aware web. Hence, the borders of digital art are widening rapidly" (Guljajeva and Canet 2011). In addition, artists are also very much aware of the dark side of the online world and aim to tackle this issue in their practices. In particular, audience's post-participation in an art installation is often used to underline the paradigms of the surveillance age. To be more precise, indirect post-participative artworks highlight, in significant extent, dataveillance and the application of contemporary complex surveillance strategies online.

4. DIRECT POST-PARTICIPATION

As mentioned previously, direct post-participation refers to the fact that an artwork shares physical space with its post-participative input, whose participation is passive, often unaware and without consent in the artwork. Thus, this chapter explores the role of direct post-participation in my art practice and also draws on the related artworks. Three artworks of mine are discussed in detail: “Data Tower” (2015), “Budgie Waltz” (2012) and “Traveling Fish” (2014), which help me to research the direct post-participation component from the perspective of both human and animal. “Data Tower” represents the first mode, which tracks people in the square continuously, and thus artistically relates to the pace of urban life. And two other artworks contain direct post-participation as animal input by using budgerigars and a golden fish. All three artworks are discussed the in terms of concept, direct post-participation and realisation. In addition, related artworks that demonstrate direct post-participation are introduced.

Since the introduction of animals to the discussion might be confusing and questionable, I explain the details and my reasoning below. First, I would like to emphasise that I do not see animals as the audience, but as agents that generate direct post-participative input for an artwork. Animals are a part of the artwork and not its audience. Hence, the animal component is part of the creative process. The artworks that demonstrate an animal component, which are "Traveling Fish" and "Budgie Waltz", take the post-participation concept to extremes and highlight the involuntary participation of the agents. In these particular cases, it is impossible to speak about voluntary or deliberate participation. There is no doubt that we deal with post-participation.

In explaining an animal component in the following artworks, I have replaced human post-participative input with animal one. I am discussing direct post-participation from an animal agent point of view instead. The audience is offered the passive role of an observer who is welcome to explore the post-participative process and whether they have any influence on it. The artworks illustrating my ideas about direct post-participation through the use of animals are "Traveling Fish" and "Budgie Waltz", which are introduced and discussed in the following subchapters.

These two artworks are examples of an artist testing the borders of artistic practice and research. I have made a conscious decision to work with fish and birds and test my research ideas of post-participation through these projects. The intention was to be as close as possible to the post-participative input and transpose the everyday life of it into an artwork. Hence, the animal post-participation concept here is politically loaded. For example, humans can be seen instead of the birds, who by entering and leaving their homes each time leave a trace in the system. The paradigms of the surveillance age are translated by a metaphor of animals, who act as unwilling actors instead of people. If we think on an abstract level, the people could be in the place of the trackable birds or fish. To be honest, we are actually surveilled in a similar way as to the animals in the following two artworks of mine.

To sum up, I am using animals as a direct post-participative input in the following two artworks, which represent society's current situation metaphorically: we participate in surveillance capitalism and opting out is merely a fantasy. To be more precise, in "Traveling Fish" and "Budgie Waltz" the role of post-participant has been transferred to a fish and birds, and thus, a spectator becomes a witness of direct post-participation instead. As mentioned before, the animals are part of the artistic process and not the audience.

4.1 Data Tower

"Data Tower" (2015) is the only unrealised project in this thesis. I found it important to introduce the work because it takes me a step further in the post-participation concept and the discussion of the pace of urban life. "Data Tower" was the finalist for the public art commission in the Green Square Library and Plaza competition in Sydney, Australia, in 2015. Hence, I have composed the detailed realisation plan and conceptual part. However, the project was never physically realised because the proposal was not selected.

Although the artwork draws on similar concepts as "The Rhythm of City" and "The Rhythm of São Paulo", which represent indirect post-participation, "Data Tower" illustrates direct post-participation.

4.1.1 Concept and Inspiration

"Data Tower" is a 15-metre-tall obelisk equipped with 24 LED-tile segments on its two sides representing 24 hours, which communicate the pace of life and the current time (see Figure 24). The idea of the 21st-century clock was already present in the artwork "The Rhythm of São Paulo" (2012), which takes a more mature form in "Data Tower". In addition to actual time, "Data Tower" displays the pattern of the pace of life in the square during the last 23 hours. The lifestyles of residents, whether rushing to work, having a morning jog, walking the dog or reading a book in the square, are the components of each hour when a new pattern is composed and displayed on the obelisk. Hence, the behaviour of people in the square is transformed into colours and lines, which each hour form the pattern of a correspondent LED-display on the monolith. The idea is to take advantage of the central point of the location and, by using surveillance cameras to track people in the square 24/7, to capture the movement and amount of people throughout the day.

Figure 24: Rendering of "Data Tower".

Being watched and traced is an inevitable part of the information and surveillance age today. Underlying this fact, I have decided to track people and life in the square and let them generate data in the form of colour and lines. Hence, the data can be seen as an artistic material, which is sculptured by me as an artist and by an interactive system that has direct post-participative input from the people in the square. By sculpturing data in this way, the art installation demonstrates the pace of life in the square for the last 23 hours. Hence, one is able to see which hour is the most active or empty in the location (see Figure 25). Maybe during weekends, "Data Tower" shows more slow or relaxed traces generated by people in comparison to weekdays.

Concept-wise I have the same departure point as in the case of "The Rhythm of City" and "The Rhythm of São Paulo": capturing and artistically forwarding a city's pace of life. In this sense, all three works are very much related to representing my search for the rhythm of life in an urban space. While "The Rhythm of São Paulo" and "The Rhythm of City" talk about the pace of life in the virtual dimension of the city, "Data Tower" creates a dialogue between the place and its residents. To be more exact, it communicates the rhythm of life in the public space, while people compose the actual artwork through living their everyday lives. In this sense, by tracing each passer-by, "Data Tower" is closer to the ideas and methods of Bornstein & Bornstein (1976) and Levine (1999), who explored the urban pace of life and culture by observing the tempo of pedestrians and services. Moreover, "Data Tower" aims to reflect the life and culture of the square, while creating a new relationship between residents and the artwork.

Comparing "Data Tower" to "The Rhythm of City" and "The Rhythm of São Paulo", the significant difference with the previous artworks is the data source. "Data Tower" does not use geo-located social media data; instead it uses tracking technology that is embedded into the sculpture. Urban cameras track people 24/7 in order to capture movement and speed throughout the day and night. As I describe on my website, "'Data Tower' will show much more than time, it will tell us the activity of people each hour. The moving pattern of a person will be converted into a line traveling around 'Data Tower'. The colour of a line will be determined by the speed of a pedestrian." (Guljajeva and Canet 2016)

While the two previous artworks talk about surveillance capitalism, dataveillance, and tracing methods in social media, "Data Tower" addresses issues of surveillance and excess of CCTV cameras in public space. According to Ericson and Haggerty (2006: 12), "[s]urveillance becomes the cost of engaging in any number of desirable behaviours or participating in the institutions that make modern life possible." In borrowing Foucault's notion, modern power today belongs to the institutions and corporations who have access to the data acquired by the appliance of surveillance technology. The theory of disciplinary societies by Foucault has been updated by the ideas of Gilles Deleuze, who described societies of control in 1992 saying that man does not need to be enclosed to be controlled. In his words: "Control is not discipline. You do not confine people with a highway. But by making highways, you multiply the means of control. I am not saying this is the only aim of highways, but people can travel infinitely and "freely" without being confined while being perfectly controlled. That is our future." (Deleuze 2007: 322) This means that in the societies of control it feels free, but we are surveilled and dependent on the networks and infrastructure like never before.

Hence, my intention is to underline the fact that in the time of surveillance age we are always being watched whether we are in the public or private space. On the other hand, I aim to twist the purpose of surveillance technology and apply it for artistic purposes instead by creating a new relationship between the people and the place. The artwork does not offer an immediate output of participation but refers to the fact that everyone who passes by or spends time in the location becomes a part of the artwork and completes it. One can be aware of this fact or not; the participation act is realised anyway, and this is the core idea of post-participation. What is more interesting is that awareness is relative and vanishes with time: one can be aware of participating today, but after a week or a month people will continue their usual lives and behave as they usually do.

In conclusion, "Data Tower" aims to reflect the life and culture of the square, while creating a new relationship between residents and the artwork. It means that locals would not look up only to check the time when passing by the obelisk, but also to realise the tempo and pattern of the last 23 hours. Moreover, by applying tracking technology in public spaces and integrating audience post-participation, the art installation introduces a different approach to the concept of post-participation, which is directly addressing physical space and mirroring its post-participative aspect.

4.1.2 Direct Post-Participation Component

As described in the first chapter, the audience and artwork share the same physical space in the case of direct post-participation. This means that the artwork's scanning area coincidences with its displaying location. Hence, the audience is not asked to participate in the art piece; it acts as a post-participative input for the interactive system by default. In other words, active participation is not the aim of the artwork, and there is no option for the audience to influence the system deliberately.

In the case of "The Rhythm of São Paulo", the public is able to learn about the activity of online São Paulo, but the audience of "Data Tower" becomes the part of the artwork in the physical space without a choice. Hence, choosing not to participate means "avoiding a meeting with the digital gaze" (Ozog 2010: 104). Although their direct post-participative input is captured in real-time, the visual output is not immediate but with a delay of up to 23 hours.

Taking from here, the interest area of “Data Tower” is the square, and people in it are the direct post-participative input for the artwork’s internal interactive system. As a result of real-time tracking and speed detection, the movement and life tempo of the passers-by are converted into colours and lines that compose a new pattern on the obelisk each hour. One could argue that people could on purpose convert post-participation to active participation by altering their behaviour intentionally. However, active participation is not the goal of the artwork, and second, after a certain period people stop noticing tracking and accept the post-participative process. Moreover, the long-term dialogue between the audience and the artwork is more valuable because the idea is that “Data Tower” communicates the square’s pace of life to locals.

The virtual, unseen, which is described as indirect post-participation in this thesis, feels more like a metalevel, rather than direct post-participation, which makes the audience feel more connected with an artwork, although they have not much of an alternative on the choice of participation. Hence, once again underlining the difference between direct and indirect post-participation: the former is connected with the physical exhibition space and the latter not. I believe the relation with the place makes the audience relate more to an artwork. And, therefore, I am talking about a growing relationship between a spectator and “Data Tower”. The intention is that at some point locals will be able to read and understand the patterns of the pace of life from the obelisk.

4.1.3 Realisation

As mentioned previously, the obelisk is divided into 24 display-segments horizontally representing the current time and the pattern of the past 23 hours. The time and pattern of each hour correspond to its segment according to the hour. Accordingly, the bottom segment stands for 12am and the top one for 11pm (see Figure 25). This logical approach helps achieve the aim of people understanding the tempo and culture of the place throughout a day.

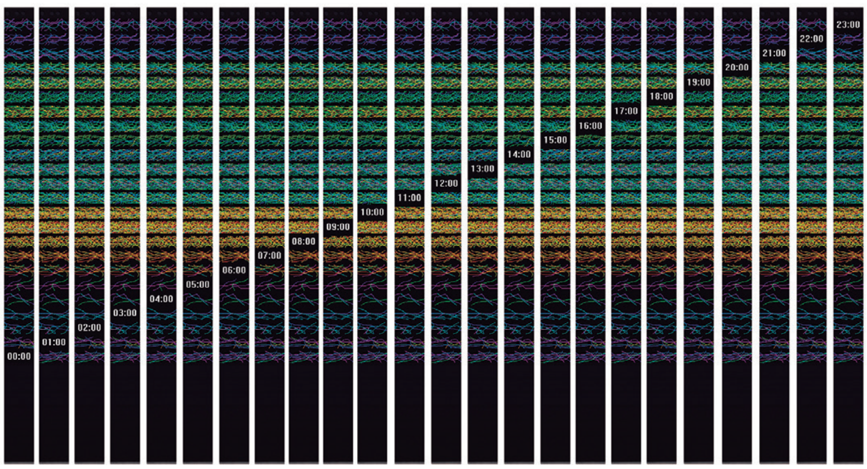

Figure 25: "Data Tower's" segments correspond to an hour.

Placed on top of the sculpture, a number of cameras track people and their movement in the whole square. The dedicated software analyses the images from the cameras and translates the information into a specific colour and line, which is displayed on the correspondent screen segment according to its hour. The moving speed of pedestrians is mapped to the colour wheel: from magenta for standing still to red for running (see Figure 26). This way each person in the square is assigned a colour according to his/her moving tempo and a line that represents the person's trajectory in the square.

To be more precise, this mapping approach allows the audience to understand by reading the colours whether the last hour was rushed or relaxed. And the number of lines shows whether there were many or just a few people in the place.

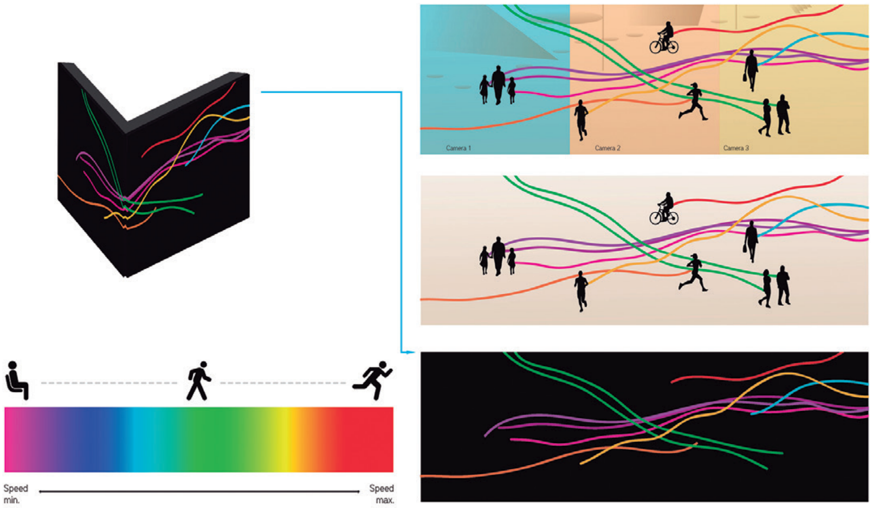

Figure 26: Visual composition of "Data Tower".

When it comes to the tracking technology, "Data Tower" uses six cameras to cover the combined field of view for most of the square. Three cameras are for day-time tracking and the other three for night-time. The cameras are controlled over the Ethernet. The software is realised in OpenFrameworks and programmed in C++ programming language. The software is based on an ofxDarknet library that uses Yolo2 algorithm, which is a broad learning trained algorithm for tracking pedestrians from above. Each person is detected individually as a unit and followed over time to determine his/her moving speed and trajectory in the square. The dedicated computer has an auto startup of all necessary applications and remote access for maintenance purposes.

Concerning the display for outdoor use, the minimum brightness of a LED-screen is 3000–5000 cd/m2. The led display has a lifespan of 100,000 hours (11 years) and ip65-ip68 level of protection. The pitch is 10mm LED and has an optimal viewing distance of 7 to 75m. Nevertheless, being closer than 7m allows viewers to see the content well, too. The screen is designed to work 24/7. LED cabinets are controlled over the Ethernet. There are 12 cabinets for each side, 24 in total. One side of the obelisk has no display because it does not face the square, but a residential building instead. The 24-layer-division (a section per each hour) is realised in software.

The metal frame is made of stainless steel. For the back part and the down part of the tower 3–4mm black stainless-steel sheets are used composed of layers following the 24-layer aesthetics of the data tower. The obelisk is planned to be robust. The LED display starts at a height of 3m to avoid any vandalism.

4.2 Budgie Waltz

"Budgie Waltz"[13] (2012) introduces an animal component to the discourse of post-participation. As mentioned previously, a post-participative input can also be animal one, and thus, the following artwork illustrates this claim. With this art project I feel and test the borders of the conceptual term; however, I believe it also represents a research evolution. Here, with the example of budgerigars, I explore what happens if the artwork is completed by the post-participative input of birds instead of humans, leaving the audience only in the passive role of observer.

4.2.1 Concept and Inspiration

The art project was realised while in residency at the Verbeke Foundation in Belgium in July 2012. The foundation is a unique place for art creation and display because it has a significant amount of rural space and different species of animals that provide artists with extraordinary working conditions and inspiration. Hence,

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13 "Budgie Waltz" was realised while in residency at the Verbeke Foundation in Belgium. Since the artwork is site-specific, it remains in the collection of the foundation, and it is rather difficult to exhibit "Budgie Waltz" elsewhere.

I was privileged to work with about 100 budgerigars (in short budgies, see Figure 27) and convert their approximately 20 × 20 × 5(h) metre large-scale cage into an artwork.

Figure 27: Budgies of "Budgie Waltz" at the Verbeke Foundation.

The art project consists of budgies creating a piano play by entering and leaving their birdhouses. Each entrance to a birdhouse is equipped with a light sensor, which is triggered by a bird entering or leaving the house. The sensor activates the correspondent solenoid, which pushes down a specific key on the Berlin piano, and thus, produces a note. In other words, "Budgie Waltz" draws on the budgerigars' life pace and converts it into a piano play using a real musical instrument. While "Data Tower" watches every step, the locals make in the square, "Budgie Waltz" registers every entry to the birdhouse by budgies. In a way "Budgie Waltz" aims to come as close as possible to the post-participative input and embrace it into the artistic process. Thus, without knowing and continuing their normal life, the birds become a part of the art installation.

The topic of surveillance is one part of the concept, which is surprisingly translated into a piano play as a reference of not knowing what happens with these data subsequently. In this art project, the monitoring and tracking have travelled from a street and social media to home. As an ironical metaphor, the budgerigars become the actors of humans. Every time a bird enters or leaves the birdhouse, the piano key goes down and produces a sound. Like in a smart home, every time one asks to make a coffee, brushes teeth, vacuums the home or watches TV, he or she leaves a data trace behind. In the article "The House That Spies on Me", Kashmir Hill and Surya Mattu discuss in detail what kinds of data get sent out constantly from their smartened-up home as an experiment. In their words, "[g]etting a smart home means that everyone who lives or comes inside it is part of your personal panopticon" (Hill and Mattu 2018). And this personal panopticon is used for spying by many parties, like vendors, third parties and intelligence agencies of several states, the USA for example (Ackerman and Thielman 2016). Hence, my idea is to approach this problematics and paradigm of today with a non-linear artistic expression involving budgerigars, or more precisely, making artwork from existing birds living in their huge cage. I believe budgies forward the metaphor of being spied on at home and the surveillance state perfectly. Moreover, involving the birds enabled me to approach the subject much closer than I could do by using humans as the post-participants.

In addition to the surveillance, an unpredictable score, which follows the everydayness of birds, is a part of the artistic thinking. Hence, the birds dictate the rhythm and pitch of the piano performance. Since coming in and going out of their houses is a part of the standard behaviour of budgies, it also allows me to discuss their rhythm of being. The use of the pace of life concept, which began with "The Rhythm of City", refers to my continuous interest towards the tempo of everyday life, like in all my artworks described so far. "Budgie Waltz" is an art installation that invades the cage of budgies and translates the life of birds into a musical score, which has a reference to “Baltic Sea Radio” that is also concerned with a sound score in flux. Ultimately, with “Budgie Waltz” I aim to go beyond human-based or human-generated data and activities and use the birds’ behaviour instead.

4.2.2 Direct Post-Participation Component

As already described at the beginning of this chapter, it was a conscious decision of mine to try to use animals as a direct post-participative input in an artwork. I was interested in seeing what would happen if a living organism other than humans becomes a part of the artwork. In order to realise this experiment, I undertook an artistic residency at the Verbeke Foundation, where I had a chance to work with numerous budgerigars. Hence, working with the birds was a decision taken there and greatly inspired by the environment of the foundation. Also, I was thrilled to work with the existing settings, and so I intended to embed the everydayness of it into an art project.

What is more important, apart from converting a birdcage into an artwork, is that I have also applied it as a research lab. Since I worked for the first time with birds, there were many things to discover. First of all, I have understood with “Budgie Waltz” that the birds not only become an artwork but the whole of their existence converts into it. It was a novel experience for me that I had not felt in my previous artworks. Second, in the “Budgie Waltz” project I managed to get closer, as an artist and researcher, to the post-participative input than I could ever have achieved with humans, I believe. Moreover, the whole post-participation concept is elevated to the stage-like scenario: the everydayness of birds is right there and observable for the audience. The post-participative input shares the same space as the artwork, and therefore, I am talking about direct post-participation in the case of "Budgie Waltz". In the end, I think with this artwork I have succeeded in underlining the core of post-participation in the brightest colours: a natural and undisturbed behaviour of a subject is embedded into an artwork as a direct post-participative input. Of course, the sensor system was noticed by the birds when it was installed in the birdhouse. But after a certain time, the upgraded living facilities became normality for them.

In regards to the birds' consciousness, for me, it is not interesting to discuss whether budgies are able to develop awareness of the relation between their action and consequence over time or not. Simply put, I am not investigating whether budgies can achieve an understanding that they are able to play a piano or not. Therefore, I am not going to pay attention to this. What is exciting for me, is the translation of regular life into artwork as a direct post-participative input. "Budgie Waltz" is the first artwork where I have used birds as a direct post-participative component. As mentioned previously, I do not see budgies as the audience, but as a part of the artwork, one element, which enables me to further explore the post-participation component. Hence, after having a research framework based on human input only, I was curious to explore the animal component, too.

Concerning the audience experience, the role of observer is offered to a spectator, who is able to sense the connection between the ever-changing piano play and budgies' behaviour, and thus, discover the post-participation mode in the artwork. Obviously, the presence of people, especially if we talk about a large number of visitors, can affect the birds' behaviour. But again, it is something that is out of my research interest range, and it is part of the game: the artwork follows the budgies' pace of life. Moreover, in the foundation, there are always visitors, and the budgerigars are used to that. However, what is more important is that the audience members are not simply observers, but rather witnesses of the direct post-participative process, which is brought as close as possible to them. I would like here to borrow Juha-Heikki Tihinen's words when he analysed Uku Sepsivart's artwork "Michelangelo's Assignment" (2017) where the birds were gradually destroying a replica of Michelangelo's sculpture made of fat: "The viewer can have the experience of becoming animal. Become animal, just for a moment, it's worth it!" (Tihinen 2018: 92) Drawing on Jacques Derrida's (2001) thoughts on how humans try to differ from animals, by confronting the audience with the animals in the direct post-participation process inside the artwork, the metaphor-is actually turned into recognition.

To sum up, "Budgie Waltz" illustrates my exploration towards the integration of animal direct post-participation into the artwork. I have reduced the distance between the direct post-participative input and the interactive system so drastically that it is difficult to distinguish whether the birds are part of the artwork or the artwork is a part of the birds' life. In other words, there are no physical or mental borders between the artwork and its scanning area. I am saying this because from the audience's point of view, the scanning area, which is the bird's cage, is located in the territory of the artwork, and thus, perceived as a part of it. In the end, this was the reason and research interest behind using birds as a direct post-participative component.

4.2.3 Realisation

If I compare "Budgie Waltz" to other artworks presented previously in regard to realisation, it contains relatively simple interaction technology that simply applies electronics without any computer system. Although the technology behind the art installation is relatively low-tech, the scale of the cage added a certain degree of complexity and required hard work when installing all the electronics, cables and covers.

Concerning the birdhouse, it is not a standard one but a more prolonged wooden construction with 32 separate entrances. Hence, it was necessary to equip all of those entrances with a light sensor (light resistor) and a bright LED (see Figure 28 below). This solution helped register and trigger an action of a solenoid each time a bird entered or left the birdhouse. To be more precise, when a bird enters its home, the light beam coming from the LED is disturbed, and thus, the sensor is triggered. If the light sensor is triggered, it lets the current pass through, and therefore, a transistor (TIP 120) closes the voltage circuit of the solenoids, which results in a stroke pushing a piano key down. As a result, each entrance to the birdhouse is a correspondent piano key. Thus, every time a bird enters or leaves its house, a piano key is pushed. This translation enabled me to put the everyday life of budgerigars into a piano play.

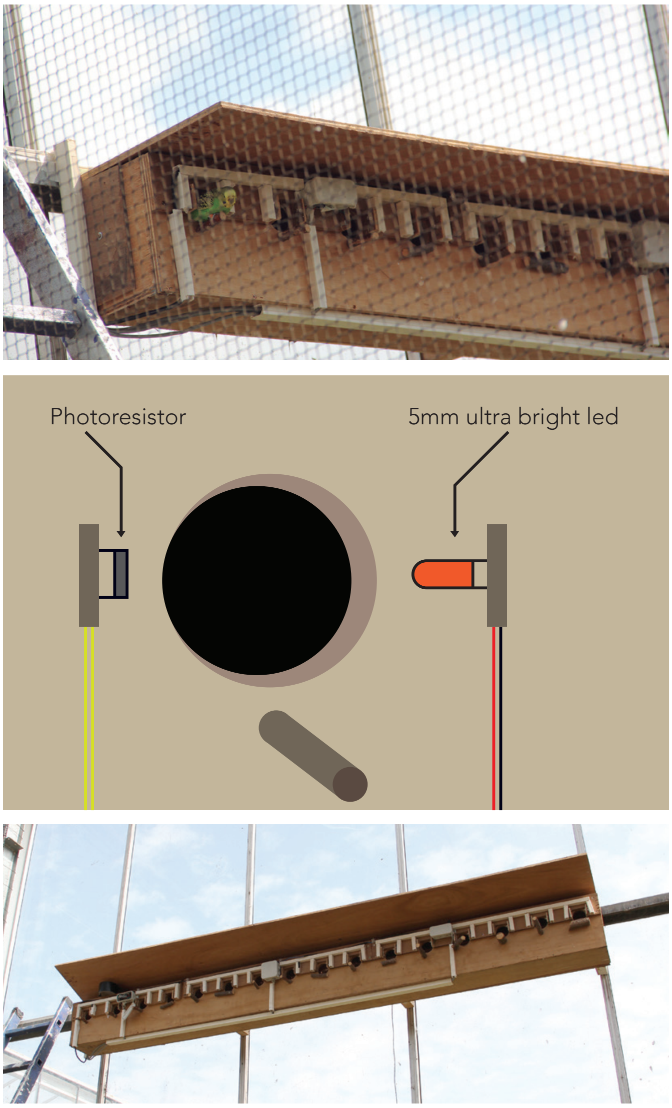
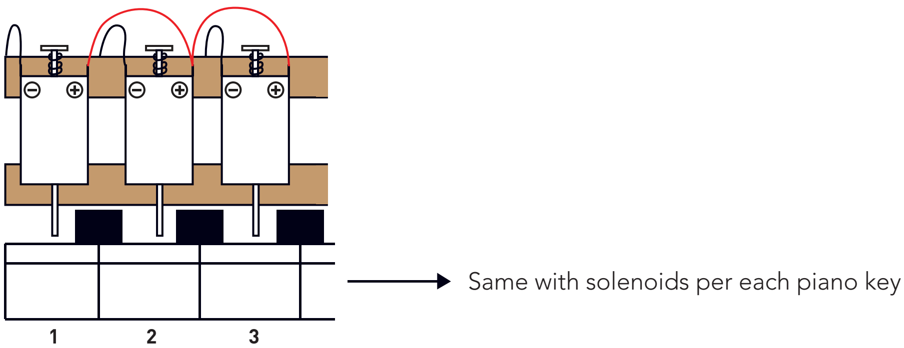


Figure 28: Each entrance of birdhouse equipped with a sensor and LED light.

Regarding the piano part, a Berlin piano was used, which was installed in the front of budgerigars' cage. I do not use all the piano keys, just 32, which correspond to the 32 birdhouse entrances. Hence, it is a simple one-to-one mapping. The 32 solenoids, which realise the piano play when triggered, are fixed in the metal profile, which sits right on the top of the piano keys (see Figure 29). I use a push-type solenoid, which means the component pushes down a certain distance (14mm stroke) when the voltage is applied. This distance is just enough to make the piano keys sound.

When it comes to power, all electronics run on 12V.

However, because of the considerable distance and long cables, it experienced a loss in voltage. For example, a solenoid did not have enough power to push down a piano key. The solution was in supplying a higher voltage than the components required. Another constraint was the birds themselves. I had to cover all the cables and electronics adequately to avoid budgies destroying them. Unfortunately, some parts, like sensors and LEDs, are difficult to protect, which resulted in birds destroying some of them in the long run.



Piano Keys from front view

Figure 29: Solenoids on the top of piano keys realising the play.

To sum up, the art installation consists of a big bird cage, about 100 budgies, a birdhouse with 32 entrances each equipped with a light sensor and a LED, a Berlin piano and solenoids. The interactive system converts the normal life tempo of birds (entering and leaving the house) into a piano play.

4.3 Traveling Fish

My interest towards the integration of animals as a direct post-participative input into an artwork continued with another artwork titled "Traveling Fish"[14] (2014). In this case, the settings were specially created for this art project. It means I purchased a goldfish and everything required for the existence of a fish. While continuing its ordinary life in an aquarium, the fish is navigating city streets in Google Street View.

4.3.1 Concept and Inspiration

The inspiration for "Traveling Fish" came from a famous cartoon "On the Internet, nobody knows you're a dog" by Peter Steiner, which was published for the first time in New Yorker magazine in 1993 and remains the most reproduced cartoon in the history of the publication (Cavna 2013). During the early years of the internet, the anonymity online was a fact. However, the known cartoon cannot be applied to describe net-culture today, which is seen as a panopticon instead. Drawing also on the thoughts of Marc Auge (2008),

14 "Traveling Fish" was exhibited as a solo show on 13–22 March 2014 in the Design and Architecture Gallery in Tallinn, Estonia.

who talks about excess of space, time, and ego in his book *Non-Places*, for me as an artist it was exciting to translate the ideas of multi-presence and travelling the world without leaving your living room into an artwork. Hence, I have modernised the quote for me as follows: on the internet, you can be everywhere. And I asked myself questions, like what if a fish could navigate the internet and travel through a city?

Hence, "Traveling Fish" as the name suggests is a fish that travels the world online. A golden fish in an aquarium is placed in the middle of the exhibition space (see Figure 30), above which is fixed a camera for tracking the fish, and a projector. The projector displays the image of the Google Street View of a city, which follows the fish movement. If the fish goes left, right, front, or back, the system progresses in the virtual street according to the direction the fish goes. Moreover, the Google Street View is made to look like underwater, which adds the impression that the fish can indeed go for a swim in Tallinn or somewhere else. Thus, without knowing, the fish is given the freedom to undertake a virtual voyage in a city, and it also curates the image content on the wall.

At this point, the audience is left in the passive role of observer, who is invited to join the travel and discover where the fish goes. It should be emphasised that converting a spectator into an observer is done on purpose to mirror the paradigm of the post-digital age: traveling and being everywhere without leaving a physical location. It becomes normality to think that there is no place where a Google car has not already been and brought the *gran vista* to us. Thus, my idea was to raise a question about the excess of time, space and ego, but also whether we should be a passive sheep of giant companies, like Google, and count as sufficient and valid the views and realities we are offered. An example of this is the latest Google Earth version that included the Google Voyager feature from

2017 (Stevens 2017), which takes you on numerous travels, making us think that we go where we want and keeping us online as long as possible or as long as they want. Another example from real life is a man cycling through the UK in his VR glasses using Google Street View without leaving his home (Vincent 2016). Thus, "Traveling Fish" emphasises the mind shift in regard to an endless voyage from a living room with an internet connection.

Since the installation is made to look like its underwater, the artwork can also be perceived as an apocalyptic view of a city entirely covered with water where only fish and sea life have survived and have taken over control.

Concerning using a living organism as part of an artwork, I applied the same approach as in the "Budgie Waltz" art project: using a fish and it being in an aquarium as a metaphor for the paradigm described before of what our society is experiencing. Peter Steiner applied the figure of a dog in order to describe internet users; I mirror modern society by using a fish and its everydayness.

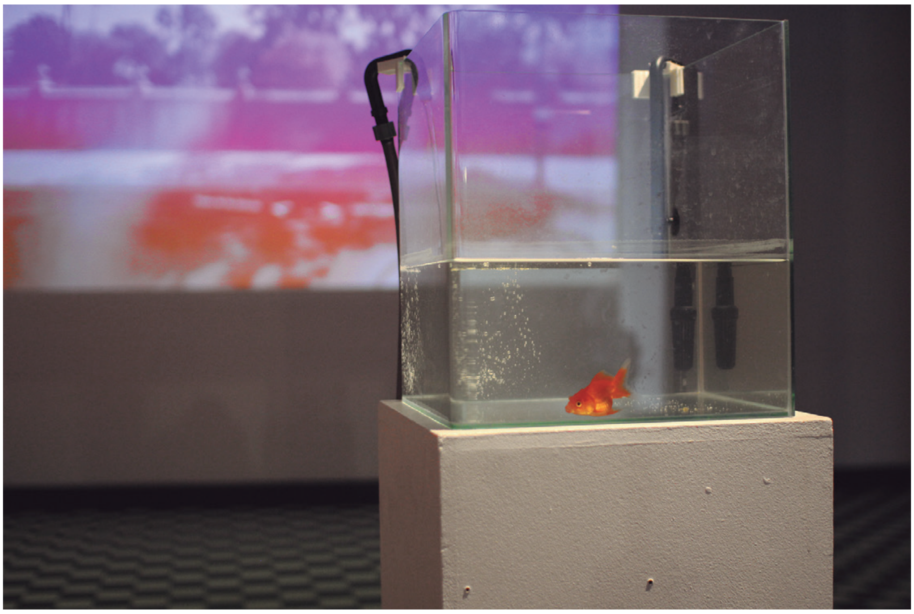


Figure 30: "Traveling Fish" (2014) by Varvara & Mar in the Design and Architecture Gallery in Tallinn in 2014.

4.3.2 Direct Post-Participation Component

"Traveling Fish" is my second attempt to stage direct post-participation. This time I created the settings for the artwork myself: placed a golden fish in an aquarium in a gallery space and made the projected image on the wall follow the fish in real-time. This means that whenever the fish swims in a particular direction in the water tank, the virtual street view obeys the fish's movements. From the perspective of a fish, it is simply in a water tank in its usual living environment. However, from the view of the audience and concept, the fish is located on the street doing desktop traveling in some city. When it turns left or right, moves front or back, the system does the same in the environment of Google Street View. Hence, the audience is trapped in an image that follows the fish. In other words, the fish orchestrates the art installation, and a spectator has the passive role of observer, who is invited to witness how an interactive system translates the everydayness of a fish into a virtual voyage.

Since the fish in an aquarium is a part of the spectacle, I talk about direct post-participation. Similarly to "Budgie Waltz", the idea was to get as close as possible to direct post-participative input and also allow the audience to do so. Hence, the viewer is confronted with the familiar Google Street View but from the perspective of a fish and its choice of navigation. It means the centre of artwork is the direct post-participation of a fish and not that of a spectator. Instead, the audience is invited to follow the immersive journey of a fish.

When it comes to the question of the consciousness of a fish, I am not interested in speculating whether the fish is able to understand that the image is following its movement or not. As an artist and researcher, I am acting from the point of view that I am embedding the fish and its usual life into an artwork. There is no aim to make an assumption about the fish's understanding of the output of its input.

In conclusion, "Traveling Fish" draws on the experience I gained from "Budgie Waltz": embedding an animal's direct post-participation component into an artwork and getting as close as possible to the process of direct post-participation. The difference is that this time I have staged the natural settings and installed them in a gallery environment. For that reason, I have used a fish, which is usually bought in a shop and placed into an aquarium in a casual space whether it is a living room, hotel lobby, office or somewhere else.

4.3.3 Realisation

The art installation consists of a fish, equipped aquarium, webcam, computer and projector. The hardware components are suspended right above the aquarium (see Figure 31). The camera looks straight down in order to perform real-time tracking, which is realised in a computer using computer vision in OpenFrameworks. The software tracks the fish and maps its movements to the navigation in Google Street View. It means if the fish moves right, left, front or back, the street view progresses in the same direction. The projector outputs a real-time image of Google Street View on the wall in front of it, which has an overlay of a filter that produces an underwater effect.

Coming back to the software part, it is divided into two sections: one for tracking the fish in OpenFrameworks, and another for navigating the modified Google Street View in a Chrome browser application, which was realised in Javascript and HTML browser code. Concerning the first part, tracking the fish is accomplished by applying colour tracking and a background subtraction algorithm. Since the fish is orange and the background intentionally white, the software is able to find a blob by the colour difference in the image, and thus, track its movement in real-time. In this particular case, the blob is a fish. To be more precise, the software uses an adaptive background subtraction to overcome the problem of the background's colour change, which is caused by water changing its colour over time.

When it comes to the second part of the software, the movements of the fish are mapped to the navigation and progress in Google Street View. Although the video output is two-dimensional, the fish swims and is tracked by the camera and software in the range of the whole water tank. The translation is solved by the tracking software that finds the reading degree of the movement and translates it to the navigation in the virtual map. In other words, each time a motion of the fish is detected, the image on the wall progresses in the same direction as the fish moves. The underwater effect is achieved by merely overlaying the water filter in front of the original Google Street View image, which receives the orders to progress or change perspectives from the software that tracks the fish.

Regarding the difficulties, sometimes the fish (the system) got trapped in a one-way street, and the image would not progress. The possible solution could be in sensing such situations and changing the fish's location randomly or returning it to the initial position. In the exhibition, in 2014, I used two cities for travelling: Tallinn and Madrid. However, the number of places could be significantly expanded.

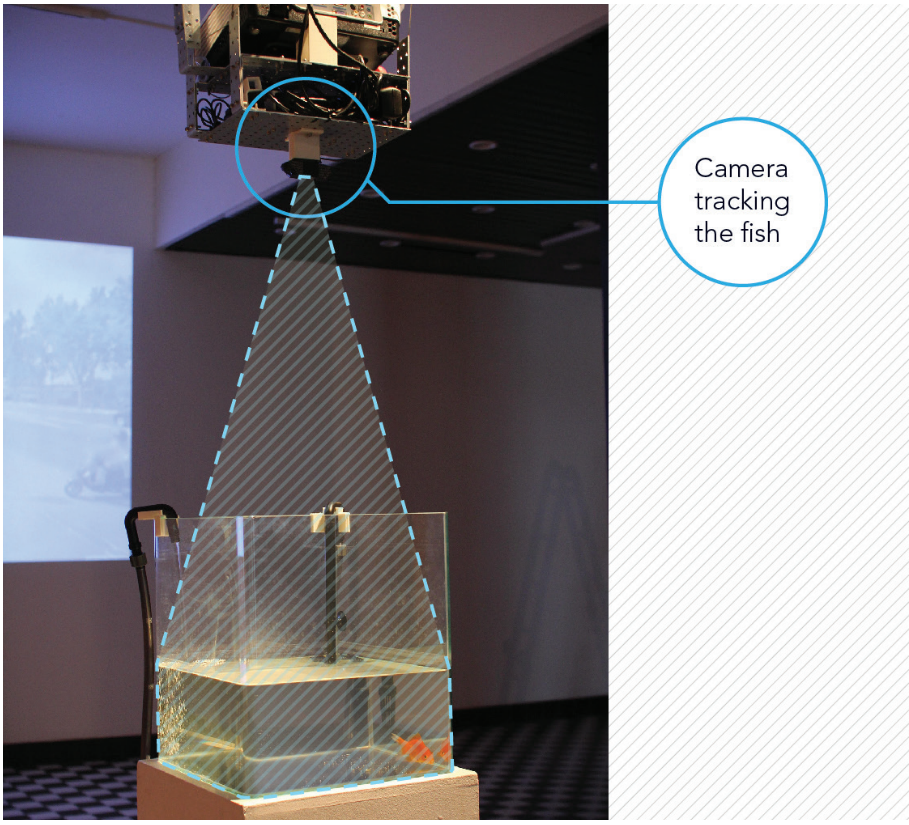


Figure 31: The setup of "Traveling Fish" in the Design and Architecture Gallery in Tallinn in 2014.

4.4 Related Artworks and Discussion

First, I would like to explain two artworks of mine that I find related to the direct post-participation concept: "Binoculars to… Binoculars from…" (2013) and "Chameleon" (2016) (see Appendix 1).

"Binoculars to… Binoculars from…" is an interesting art project to mention, because it involves direct audience interaction, as well as direct post-interaction to some extent. The art installation consists of a number of binoculars, which are inspired by typical touristic ones, an urban projection and surveillance cameras. When looking into the binoculars, a spectator sees the image of a surveillance camera from a distant location instead of enjoying a splendid view in front of him/her. For example, during Connected Cities festival in 2013 "Binoculars to… Binoculars from…" interconnected seven cities by creating multi-directional streams between the locations. Hence, the audience was invited to open real-time windows between the sites and look at the people on the other side of the same location. As a trade-off, the eye of an observer also got recorded and displayed in the same place he/she was looking at. Hence, the observed ones were able to see the observer too (see Figure 32). In the end, apart from connecting playfully different locations, the main aim is to allow for observing the observer. Hence, the artwork talks about surveillance, but also about the excess of ego, time and space similarly to "Traveling Fish". "Nowadays, multiple and simultaneous presences have become normalised, travel over long distance is hardly felt, and the meaning of space has become relative." (Guljajeva and Canet 2016: 223)

The reason for not presenting "Binoculars to… Binoculars from…" as a direct post-participative artwork was its hybrid nature. Moreover, I primarily consider this art installation telematic and interactive. What is more, the hidden part, which is a webcam inside the binoculars recording the eye of a spectator, is usually discovered quickly and it becomes a narcissistic attraction in its own right. Nevertheless, I find this artwork very important to mention because it introduces a hybrid nature to the discussion demonstrating that direct interaction and the concept of direct post-participation can meet each other within an artwork and be very engaging.

Figure 32: "Binoculars to… Binoculars from…" (2013) by Varvara & Mar at Connecting Cities Festival in iMAL, Brussels in 2013.

The second related artwork is "Chameleon", which is a white flag from fabric and RGB LED-strips that mutates between all the nations' flags without prioritising any (see Figure 33). In the words of Pau Waelder: "The design of each flag is never completed, but mutates constantly from one nation to another, blending colours and shapes in such way that it becomes an amalgam of all flags and none of them at once. Like a scared animal who tries to adapt to its environment, the flag is immersed in a never-ending process that reminds one of the critiques of cosmopolitanism by Barber: trying to represent all the nations on the planet, it ends up becoming a foreign or even alien flag." (Waelder 2016: 18) As the name suggests, the art installation acts as a chameleon; if it senses people around it, it freezes on the pattern that it is at that moment.

In this case, the relevance is in its direct interaction mode with the audience, which remains unnoticed by spectators, and thus, in practice, it can be perceived as direct post-participation. In the end, the behaviour of the artwork is altered by the viewers' presence, which in most of the cases remained as an unconscious act. The intention, however, was aware interaction, which needs to be discovered by the audience. In other words, often it was not understood how the direct input of spectators affected the output of the artwork. Nevertheless, since my aim was not dominant but rather shy interaction with the audience, I do not speak of "Chameleon" as a post-participative artwork. What I want to underline is its relation to the concept of direct post-participation. Paradoxically, sometime when it is intended to apply direct post-participation it is turned into direct interaction by the audience and vice versa, as in the example of "Binoculars to… Binoculars from…" and "Chameleon".

Figure 33: "Chameleon" (2016) by Varvara & Mar at their solo exhibition in Abello Museum in Mollet del Valles, Spain in 2017–2018.

In the practice timeline, I have described "Humans Need Not to Count" (2017) as a direct post-participative artwork. It is a custom-made robotic arm that counts gallery visitors (see Figure 34). The art project confronts the audience with a literal fact in an exhibition space: a robot takes over the job of a gallery assistant. In short, as I have described before, "[t]his work poses questions about employment, robotics, and quantification" (Guljajeva and Canet 2017: 10). The infrared sensors installed in the entrance of gallery register the visitors, and thus, the robotic arm presses the tally counter accordingly. Since the art piece does not ask for audience interaction but applies the method of scanning area – everyone who passes by is counted whether it is a conscious act of participation or not – I refer to this as a direct post-participative artwork. The aim is not to immerse a spectator in the artwork but rather embed the rhythm of the gallery, and the rhythm of comers and goers into it.

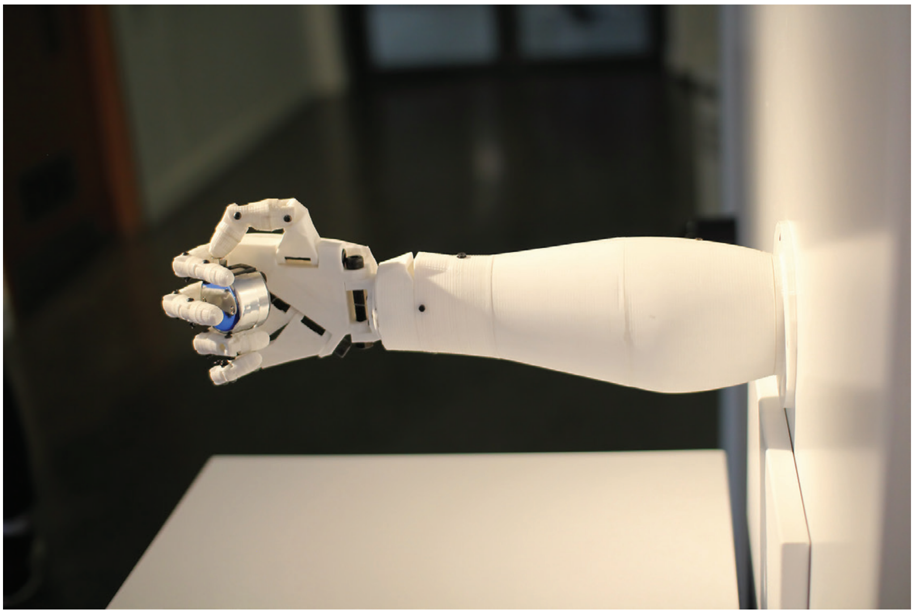


Figure 34: "Humans Need Not to Count" (2017) by Varvara & Mar at the "HUMAN NEED NOT APPLY" exhibition in the Science Gallery Dublin in 2017.

When it comes to the method of scanning area that I refer to above, it is arguable whether the audience is interacting with the artwork on purpose or its participation is unintentional. In the case of "Humans Need Not to Count", it can be both, but my intention is the latter. I am not searching for an active participant; my aim is the direct post-participation of the audience.

Concerning the related artworks by other authors, Rafael Lozano-Hemmer describes his art installation "Zoom Pavilion" as interactive on his website (Lozano-Hemmer 2015), although the dominant interactive system of the artwork is constantly searching for spectators' faces, and it makes no distinction between active and passive interaction, or not-willing-to-participate-at-all (see Figure 35). The art installation creates a situation of inability to opt for not participating. Also, Lozano-Hemmer's earlier works contain a monitoring digital gaze that is realised and inspired by various surveillance technologies, such as CCTV cameras and detection algorithms. In such artworks of Lozano-Hemmer, for example "Close Up" and "Alpha Blend" (2008), Maciej Ozog sees the spectator as a "helpless viewer-interactor … in front of the system that detects her presence, registers one's video portrait and adds the viewer on the database. [—] The viewer-interactor cannot influence the system; she can only refrain from interacting by avoiding a meeting with the digital gaze. [—] The interaction becomes an alienating experience." (Ozog 2010: 104)

A similar pattern of a system's dominance over an audience can be noticed in "Desire of Codes" (2005) by Seiko Mikami. Although the artist also defines her artwork as an interactive one, the title of it reveals the machine's superiority over the audience. The number of surveillance cameras observe the audience and add visual material to the database, from where the system chooses to display a combination of videos from the exhibition space and other surveillance cameras around the world. In Mikami's words: "The accumulating compound eye can be considered as a device to illustrate the automatic generation of desire (data) based on information collected in contemporary information/surveillance society." (Takei 2010)

I find "Zoom Pavillion" (2015) by Lozano-Hemmer very much related to "Desire of Codes" (2005) by Mikami, and to the concept of direct post-participation. The artists place the audience face to face with the surveillance material, which is obtained without the audience's notice or will. In this way, the modern power of machine is underlined. If we look into the art practice of Mikami, she is very much interested in the conscious and unconscious interaction of a participant (Waelder 2013). I can agree that there is often a very thin border between these two. However, I see the deliberate desire of an artist to demonstrate the control of the system over an audience and the shift in the interaction experience. Therefore, it is interesting to look at these artworks through the conceptual lens of post-participation, which refers to the issues of surveillance society.

The question here is why we still name artworks that demonstrate an audience's inability to influence the system with interaction or participation interactive. The aim of the artwork is opposite from audience interaction, and the emphasis is not on the viewer, but rather on the system. In the end, this unbalanced relationship between the powerful interactive system and the helpless audience is characteristic of artworks that speak about the surveillance age, where we cannot escape from being watched, traced and tracked; we are part of the panoptic system.

Figure 35: "Zoom Pavilion" (2015) by Rafael Lozano-Hemmer. Courtesy of the artist.

Continuing with the topic of surveillance and helpless audience, the artwork "The Lover" (2011) by James Coupe resonates well with what was said before and also with "Data Tower". "The Lover" is a constructed narrative that is being composed in real-time by "unwilling actors" (Coupe 2013). The latter are the audience members, who have no idea that they are involved in the artwork until they reach the space where the video work is shown. Again in realising the artistic concept, the artist used many surveillance cameras installed around the museum. Coupe explains the process as follows: "The film is algorithmically constructed using Harold Pinter's 1962 play *The Lover* as a template. [—] The film loops continuously, generating a new variation of the story each time … People physically dispersed around the museum find themselves intimately connected together via a real-time video narrative that references the politics of viewing that occurs within a museum: highly socialized and conditioned, on display as much as the objects in the museum. Knowing that their every move could become content for interpretation by my installation, the issues of identity, multiplicity, reality/duplicity, boredom and menace explored in the play become amplified." (Coupe 2011)

The reason for introducing Coupe's work is to underline the fact that a number of creative people apply surveillance technology subversively in their practices. What is interesting here is that thanks to real-time computer vision techniques, it is possible to embed both the audience and a simple passer-by into an artwork. Hence, this kind of artwork does not ask the audience to participate; everyone becomes a participator by default if he/she is in the digital gaze of the system. Another worthy mention is the work of David Rokeby, who has been exploring the video image of surveillance cameras for years. His artworks, such as "Boarder Patrol" (1995) in collaboration with Paul Garrin, "Watch" (1995–2008), "Watched and Measured" (2000), "Guardian Angel" (2001), "Seen" (2002), "Taken" (2002) and "Sorting Daemon" (2003), demonstrate the artist's search beyond direct interaction and interest in creating an artificial perception system. David Rokeby describes his artwork "Watched and Measured" (2000) as follows: "The work presents a series of people looking and being looked at, watching and being measured. The audience's feelings may alternate between sympathy and suspicion as they realise that they are not only witnesses to, but also subjects of, the system's activities." (Rokeby 2001) In examining real-time art pieces by David Rokeby, "Watched and Measured" (2000) and "Taken" (2002) can be described as direct post-participative artworks that trace the gallery space and aim to identify the visitors. In some cases, it can be difficult to differentiate between an interactive and post-participative work. However, it is clear that direct interaction demonstrates a feedback loop between the audience and the artwork, which is not present in the case of post-participative artwork.

To add one more example that shares similar ideas with "Data Tower", "See You" (2008–2012) by Thierry Fournier acts as a real-time window between today and yesterday. Fournier's artwork is somehow similar to and resonates strongly with an early work of Dan Graham, "Yesterday/Today" (1975), which brings an image from an executive office to a gallery space with exactly 24-hour delay. Also, Fournier brings an image of yesterday into today with the precise delay of a day in urban space on a screen, which is similar to a mirror (see Figure 36). In the author's words: "A coexistence of two temporalities into the same perspective creates a 'temporal depth' and an impossible closed circuit for onlookers. Alternately actors and ghosts of the same scene, those who pass in the image and those who observe them coexist without ever communicating unless they come back at the same place exactly 24h later." (Fournier 2012) When comparing "Data Tower" with "See You", I find a relation in the play with the patterns of urban life and mirroring the past but in real-time.

Figure 36: "See You" (2008–2012) by Thierry Fournier. Courtesy of the artist.

Proceeding with an art project that experiments with animals and aims to create an environment that responds or surveils their lives, I believe "Augmented Fish Reality" (2004) is worthy of mentioning, as it resonates to a large extent with "Traveling Fish". American artist Ken Rinaldo received the Award for Distinction at the 2004 Prix Ars Electronica for "Augmented Fish Reality" (deLahuta et al. 2004: 109). While "Traveling Fish" is concerned about the virtual voyage of a creature, Ken Rinaldo enables fish to move around in the physical space by using a specially-developed robot for the fish (see Figure 37). In the artist's words: "'Augmented Fish Reality' is an interactive installation of five rolling robotic fish-bowl sculptures designed to explore inter-species and trans-species communication." (Rinaldo 2004: 122) The artist used Siamese fighting fish that he had researched previously to ensure the application of an intelligent fish, who according to the scientists can socialise to some extent and have outstanding vision (Rinaldo 2004: 122–124). Hence, Rinaldo is very much concerned about interaction and communication between the audience and fish, fish and machine, and also among the fish themselves. What is questionable though is how interactive the art installation is for the audience.

It seems that the primary interests of the author are the fish and their possible interaction with the sensory system.

The example of "Augmented Fish Reality" by Ken Rinaldo demonstrates that artworks involving animals are recognised in the interactive art field. Also "Cockroach Controlled Mobile Robot" (2004–2006) by Garnet Hertz is a well-known art project in the field. In my view, a research interest towards expanding the range of interactivity, where in the case of "Augmented Fish Reality" HCI is replaced by FCI (Fish Computer Interaction), is valuable. Nevertheless, I feel the discussion about the level and existence of animal interaction in art is problematic and doubtful. However, such artworks that push the discipline on the edges of its boundaries are necessary and forward bringing.

Figure 37: "Augmented Fish Reality" (2004) by Ken Rinaldo at the 2004 Prix Ars Electronica in Linz. Courtesy of the Archive of the Ars Electronica Linz GmbH.

Also, other artists work with birds, such as Fabrizio Lamoncha, who created a slow analogue printer from a birdcage. There are two versions of the art project: "Poo Printer" (2011) and "Poo Printer Dos" (2013). The artist describes his work as follows: "'Poo Printer', an analog generative typography printer using the bird droppings as the particle substance that slowly generates the Latin alphabet characters over a large roll of paper." (Lamoncha 2013) What is more interesting from the perspective of post-participation is that Lamoncha refers to the birds' participation as an unaware process, in which he as an artist is guiding them through the creative sequence by replacing the letter-shaped roost over time (2013). And thus, the birds are producing typography without realising; they and their everydayness are converted into an artwork. Although "Poo Printer" is entirely an analogue artwork, I see the high relevance of the topic and similarities in thinking about translating animals and their usual behaviour into artistic work. Also, the themes of real-timeliness, observation as a research process and surveillance echo in the artwork of Lamoncha, which makes his work relevant in the context of my research.

In conclusion, the examples of related artworks demonstrate that artists not only work with surveillance technologies, like CCTV cameras and tracking and recognition algorithms, but they also use the strategies for the unaware and passive participation of the audience, which superimpose the dominant system over a spectator, and results in direct post-participation. In addition, the artworks involving animals illustrate a research interest towards animal-computer interaction, as well as an interest in animals as unaware actors in the creation process. It makes animals a part of the artwork but often leaves the audience in the role of observer.

4.5 Conclusions

This chapter introduced the concept of direct post-participation and its differences in practice from indirect post-participation. In discussing the differences, I think I have quite visibly succeeded in reducing the distance between a direct post-participative input, audience and artwork. Hence, apart from the role of observer, a spectator is also invited to witness the process of direct post-participation. While indirect post-participation, because of its disconnection from the physical space with the artwork, might seem like an abstract process to the audience, the direct post-participative artworks allow spectators to recognise their or someone else's participation that they are not able to control. For example, my intention behind "Data Tower" is people's ability to understand, but not influence, the pattern of the obelisk that is composed by themselves.

From there, the helplessness of an audience to master its interaction with a direct post-participative artwork is definitely one common characteristic among the artworks discussed in this chapter. This means that the emphasis is on the system and not on the audience. Some artworks, like "Zoom Pavilion" by Lozano-Hemmer, vividly demonstrate the dominance of the system over a spectator.

Ultimately, I can see artists using surveillance technology in the gallery and in public spaces. Various cameras are mostly applied, which act as an image input for increasingly powerful algorithms that are able to track and recognise. The societies of control as described by Deleuze (2007) are our reality, and these are greatly supported and encouraged by the development of technology.

Furthermore, in times of unstoppable surveillance, when smart homes and Internet of Things (IoT) are beginning to be used for spying on their owners, artists feel the urge to address these issues and draw attention to the consequences. In "Budgie Waltz" and "Traveling Fish", I aimed to tackle the problematics of big data, IoT, smart homes and privacy. For that purpose, I have used animals as part of the artworks, and thus, offered the audience the opportunity to relate to the issues that are brought up by the digital and smart revolution, and recognise themselves in the agents of direct post-participation.

In addition, I see "Budgie Waltz" and "Traveling Fish" as research experiments or artworks as a research lab, in which I am allowed to stage direct post-participation and see how close I can get to the direct post-participation component. At this point, the animals I worked with have become parts of the artwork and an experiment regarding research. The audience members are the observers, who can witness and become immersed into the process of direct post-participation. Realisation-wise, the artworks that use animals tend to apply proximity and infrared sensors, but there are also combinations of sensors and computer vision via a camera, or alternatively, the latter can be used on its own.

5. CONCLUSIONS

My artistic practice and research interest urged me to delve into the paradoxical condition of interactive art, where artworks that demonstrate no direct audience interaction are still classified as interactive. In order to address such artworks, this thesis introduced the term of post-participation to contextualise artworks that demonstrate no direct audience interaction, but yet contain an interactive system. The discussion of artistic practice reflected the transition from an active to a passive spectator. Hence, post-participation underlines the shift of interaction from the audience to a system. Several researchers have addressed this paradigm, and different terminology has been suggested, such as unaware and passive participants, along with meta-interaction by Huhtamo (2007), Strategy of System by Kluszczynski (2010) and subliminal interaction by Waelder (2008).

In addition to conscious approaches towards updating the terminology of interactive art, there are a number of artists and theorists who demonstrate the absence of the active audience in their description of artworks. For example, James Coupe (2013) names his audience as an "unwilling actor" and Ozog (2010) describes the spectators in some of Lozano-Hemmer's artworks, which talk about surveillance, as the "helpless audience". In short, there are different proposals available on how to address this shift. After evaluating and testing several terms, I decided to establish the notion of post-participation, which in this particular research was the most descriptive and valuable. Post-participation is a useful term for me as a researcher and artist because it helped me to understand the evolution of my practice from the perspective of audience involvement. In addition, the term is politically loaded, and thus, enables artists to address the problematics of privacy in the age of surveillance and dataveillance.

In returning to the classical definition of interactive art, which was referred to as direct audience interaction in the thesis, Figure 1 helped to visualise the relationships within an interactive artwork. What is important to understand is that in interactive art the audience's input corresponds to the output. In other words, the artwork would respond to the specific actions of a spectator. The audience interaction is the core essence and existence of the interactive artwork. As Lozano-Hemmer states, "[m]y pieces do not exist unless someone dedicates some time to them" (Ranzenbacher 2001). Or as Anne-Marie Duguet puts it, "interactive art transforms the spectator into operator" (Duguet 1996: 147), behind which is the artist, who creates designs and codes all the responsive environment and experience.

At the beginning of the 1980s, artists were eager to involve the audience in dialogue with an interactive system. Interactive art gained recognition in 1990 when Prix Ars Electronica introduced a dedicated category for the discipline. A pivotal moment took place in 2004 when the Golden Nica was awarded to "Listening Post" by Mark Hansen and Ben Rubin, which had no interactive element concerning audience involvement. This occasion triggered discussion around the definition and identity of interactive art. In the end, the history of Prix Ars Electronica demonstrates how the concept of interaction has been challenged and expanded. For example, the statement of Prix Ars Electronica from 2016 regarding the Interactive Art+ category clearly goes beyond direct interaction stating that the artistic interests have gone social and political, and interactivity has become pervasive. The bare excitement of novel interfaces is no longer actual (De Jaeger et al. 2016).

The commercialisation and ubiquity of interactive technology and interaction, as an attractive method, have served as another reason for artists to investigate other forms of audience and system interactions. This commercial interest towards interactive art can be seen in multiple examples of how interactive artworks have been copied or mimicked by corporate brands. For instance, the "AR Magic System" (2007) concept by Clara Boj and Diego Díaz of switching spectators' faces was used in a Netflix campaign called Snapchat face swap in 2016, and there are many more examples like this. In addition, there are several critiques on the exhibitions of interactive art that are demanding critical concepts and less entertainment, which is a catalyst for the establishment and stabilisation of this field. The audience has begun to value the artistic idea and is no longer entirely blinded by the technology and novel interfaces presented. On the other hand, artists are less attracted to interactivity and more concerned about the content and artistic concept, which are also indicators of the maturity of the domain.

Likewise, the commercialisation of interactivity and the rise of surveillance in post-digital society resonate in art. The political message reveals itself in the use of surveillance technology and methods for artistic purposes, as well as the imbalance of powers, where the audience is not given a choice of whether to participate or not. For example, "The Giver of Names" (1991–) by David Rokeby communicates "the issues of agency and control" (Huhtamo 1998), where the system dominates over the audience members, who are unaware of their role in the artwork. Huhtamo continues: "If interactivity implies an active involvement, a conscious interplay with a cybernetic system, both of these subject positions (the observer/the observed) could, indeed, be characterized as antithetical to interactivity. Arguably they are the reigning ones in a society dominated by broadcasting and surveillance." (Huhtamo 1998)

The era of surveillance capitalism dominates and controls our behaviour. The term, coined by Shoshana Zuboff in 2015, refers to the fact that users are surveilled for monetary reasons. Apart from using our data to know who we are and what we like in order to target consumer advertising specifically to users, we have proven to be very much predictable and even programmable. As underlined in Ericson and Haggerty: "Technological development, while not determinative, have been profoundly important in the rise of new forms of surveillance." (Ericson and Haggerty 2006: 4) They go even further, stating that "[s]urveillance power is expanding exponentially, with each new development potentially multiplying the existing surveillance capacity" (Ericson and Haggerty 2006: 19). Surveillance power has grown so big that it is now used for psychological warfare. For example, it is suspected that Cambridge Analytica developed an algorithm that, through social media, was able to influence the Brexit referendum and also helped Donald Trump become President of the USA (Cadwalladr 2018).

Post-participation facilitates the recognition and contextualisation of the passive modes of participation that are introduced by the surveillance age, which was a reason for not calling it involuntary or unaware participation, or extended, hybrid or system interaction, but instead post-participation. The aim was to explore and contextualise implicit participation modes at a time of extensive dataveillance. As Maciej Ozog states: "Watching and being watched are the conditions of participation in surveillance culture." (Ozog 2010: 97)

In order to draw a clear line between participative, interactive and post-participative artworks, I introduced Table 1, which analysed each sample artwork against several parameters. The example for participative art was "Untitled (Free/Still)" (1992–) by Rirkrit Tiravanija, for interactive art "Body Movies" (2001) by Rafael Lozano-Hemmer, and for post-participative art "Listening Post" (2001) by Mark Hansen and Ben Rubin. My main concerns were about the role of the audience members, their awareness of participation, how responsive an artwork was to the audience input, who the actor was, where the focus was and which type of interaction was applied. Interestingly, more similarities between a participative and interactive artwork were found, rather than between an interactive and post-participative one, which explained the need for a specific term that enabled for addressing artworks that deliberately marginalise audience participation. When looking at participative and interactive artworks, the emphasis was on the active audience, who shaped an artwork by participating and interacting. The difference between these two domains lied in the immediacy and type of interaction. In a post-participative artwork, the central role was allocated to the system, which did not wait for audience's aware and conscious interaction but rather selected its input without the consent of the audience. In short, this table helped to realise both the meeting and departure points between these three fields and served as a basis when analysing related artworks.

In terms of the explanation of post-participation, Figure 2 was developed, which visualised the relationships between the author, artwork, audience and post-participative input. The latter stood for data or image inputs, which originated from human or animal activity, where they were unaware of their participation in the artistic process. Since there was no direct interaction, the audience had no way of influencing the artwork. Hence, a spectator was offered the role of observer, one who perceives the output of the artwork. The post-participative input also had a passive role and acted as one-directional input for the interactive system, which was selected by the artist. The only two-directional connection was between the author and the artwork, which followed the same logic as in the triangle of interactive artwork. In short, post-participation is a kind of engagement that occurs in real-time without the control of a beholder or data generator. Post-participation underlines the fact that we have no power over participation and the usage of our data in many aspects. In other words, social media data and metadata can be used in various activities, including an artwork, without the owners and/or producers of these data being aware of it.

This thesis differentiates between direct and indirect post-participation, which are given an explanatory figure each (Figures 6 and 7) in order to communicate the difference between these two categories accurately. When it comes to indirect post-participation, the post-participative input is located outside of the exhibition space. This means the output and input of the artwork are physically disconnected. Even passively, the audience is not able to perceive and influence the artwork at the same time; however, this is allowed in the case of direct post-participation. More precisely, the artwork, audience and post-participative input share the same space and time. This means that, without knowing or consenting, the audience is translated into an input by the dominant system of an artwork. Nevertheless, there are examples in which the audience did not always constitute the input. The direct post-participative input could also come from animals, if they are a part of the artwork, as transpired in "Budgie Waltz" and "Traveling Fish".

In this thesis, I have divided my featured artworks according to these two categories. "The Rhythm of City", "The Rhythm of São Paulo" and "Baltic Sea

Radio" represented indirect post-participation, and "Data Tower", "Budgie Waltz" and "Traveling Fish" were described as direct post-participative artworks. It is important to mention that the artworks came first and then the terminology. Thus, this research was greatly driven by artistic practice. Although the last example often got its motivation from research, "Budgie Waltz" and "Traveling Fish", also served the role of experiments in order to explore the closeness with the direct post-participative input and animals as part of the artwork.

When it comes to "The Rhythm of City" and "The Rhythm of São Paulo", these artworks explored how geo-located social media could be applied as artistic material and be used in describing the pace of life. In addition, the related artworks had demonstrated that there was interest among other artists in applying social media data for artistic purposes. For example, in their artwork "Listening Post", Hansen and Rubin introduced an early approach to collecting data from the forums for an artistic purpose. In the end, social media such as Twitter is not simply a score for creatives, but rather it demonstrates the anthropological interest of artists and their desire to underline the fact of dataveillance today. In "Baltic Sea Radio", an AIS radar was applied to enable real-time boat tracking, a complex interplay of spaces and a sound score composition that followed the flux of local sea activity. The art project demonstrated the exploration of a physical tracking device instead of selecting online data and using sound as an artistic material.

In the direct post-participative artworks, a camera was often used as a digital gaze of the system, which the audience could not escape. The scanning method of the interest area was applied in "Data Tower", which translated people's behaviour in the square into the lines and colours of a corresponding hour on the obelisk. Also, the concept of "Traveling Fish" was realised by applying powerful camera and tracking algorithms, which followed the fish in its aquarium and mapped its journey into Google Street View. In "Budgie Waltz", a smart home situation was simulated by equipping the birdhouse with sensors that registered each entry and exit of a bird and translated it into a piano play. In these two last artworks, the role of post-participant was transferred to fish and birds; thus, the spectator instead became a witness of direct post-participation. While the participation process could be felt as abstract in the case of indirect post-participation, because of its disconnection from the exhibition space, direct post-participation brought the process much closer to the audience.

In the end, many threads connected the artworks presented in this thesis. Apparently, one was geo-locality and pace of life in one particular place. Another was the translation of the everyday into an artwork. The tempo or rhythm of life was present in all my artworks discussed in this thesis, except "Traveling Fish". However, this spoke about a related topic: digital voyeurism. In addition, the artistic practice presented demonstrated a search for different tools and processes that could embed passive audience participation into an artwork, and thus create different scenarios of post-participation. I believe it was worth introducing the term "post-participation". I am much more knowledgeable and aware of how I as an artist address the role of audience in my artworks. Also, I understand what is happening in the internal interactive system of the artwork and have tools on how to contextualise these processes. What is more important is that this practice-based research contributes to the art field by a profound analysis of post-participation, which is split into two categories: direct and indirect post-participation, contextualised and compared to the interactive and participatory artworks. Furthermore, the thesis offers tools for describing and analysing the artworks that demonstrate a shift in control from the audience to a system, which deliberately marginalise the role of a participant.

At the same time, I do understand and have also experienced the hybrid nature of artworks through my own artistic practice. As mentioned previously, it is often a struggle to classify an art piece as interactive, participative, post-participative, generative, net art or something else, because it can simply be all at once. As David Rokeby puts: “Any interactive system requires some level of surveillance. Agreeing to be surveyed is the entrance fee for any number of emerging interactive and personalized services.” (Rokeby 2010)

However, in the age of surveillance and dataveillance, the concerns about privacy have rapidly escalated, which are also reflected in many artworks aiming to make a political statement, like “Cameras” (2013) by SpY, “Democratic Dazzler” (2015) by Mogens Jacobsen, “FRILUFTSKINO: Experiments in open air surveillance cinema” (2007) by Michelle Teran, “Men in Grey” (2009-2014) by Julian Oliver and Danja Vasiliev and many more. “The motivations of those who observe us are very diverse, just as the artistic approaches are, from the most formal to the most political, pushing the limits of legality into actions of a highly symbolic nature.” (Moulon 2018: 177) Ultimately, the era of non-stop surveillance has created a highly controlled society with invisible walls and watchers, which is also reflected in the artworks where control is taken over by the machine and a passive role is given to the audience. And exactly this shift of interests and roles is the reason for introducing the concept of post-participation, which I believe helps to describe the passive role of audience and an artist’s intension. The latter had an important value when analysing my own practice and related artworks.

As underlined previously and as the concepts of my artworks suggest, there is an interest towards turning active audience participation into passive participation. This strategy echoes the surveillance age where we are losing control over our data and tolerate being monitored, analysed and our actions being predicted for commercial purposes. The paradigm is introduced by surveillance capitalism, which turns our interaction and participation into the revenues of big corporations. Hence, artists, instead of celebrating interaction and participation, have obtained a much more critical point of view, in order to address contemporary issues like dataveillance, surveillance, post-digital age, spying via smart homes and IoT, etc.

In conclusion, it is possible to say that the technological age has had a strong influence on audience participation in art. Interactivity has been explored with the advent of digital technology. And today, in the age of dataveillance, active audience participation has been converted to passive participation. There is a shift from human-computer to system-to-system interaction. In the foreground is the dominance of the system and in the background a helpless audience. Such a transformation is obviously socially and politically loaded, and therefore, post-participation is a new kind of participation that has been introduced for the post-digital times in which we live.

6. KOKKUVÕTE

INTERAKTSIOONIST OSALUSJÄRGSUSENI: AKTIIVSE OSALEJA KADUV ROLL

Käesolev loomepõhine doktoritöö uurib, kuidas interaktiivses kunstis on aktiivne osalus asendunud passiivsega. See uurimus käsitleb interaktiivse kunsti ajalugu ja identiteedidiskursust, vaadeldes seda, kuidas räägitakse kunstiteostest, mis ei kaasa publikut, kuid hõlmavad sisemist süsteemi interaktsiooni andmeallikaga. Teisisõnu, see töö uurib huvi nihkumist inimese ja masina vaheliselt interaktsioonilt süsteemidevahelisele interaktsioonile ning selle muutuse põhjuseid.

Seda paradigmat on lahanud terminoloogiat laiendades mitmed uurijad: Erkki Huhtamo (2007) on pakkunud välja näiteks mitteteadliku ja passiivse osaleja ning metainteraktsiooni mõiste, Ryszard Kluszczynski (2010) süsteemistrateegia ja Pau Waelder (2008) alateadliku interaktsiooni mõiste. Lisaks teadlikele katsetele interaktiivse kunsti terminoloogiat värskendada on hulk kunstnikke ja teoreetikuid kunstiteoseid kirjeldades aktiivse publiku puudumist esile tõstnud. Näiteks James Coupe (2013) nimetab oma publikut „tahtmatuks näitlejaks", Maciej Ozog (2010) kirjeldab

Lozano-Hemmeri interaktiivse installatsiooni „Pindpinevus“ (1992) vaatajaid „abitu publikuna“. Nihke kirjeldamiseks on pakutud välja eri lähenemisi, näidates ühtlasi, et puudub selge arusaam, kuidas rääkida teostest, mille tähelepanu on liikunud aktiivselt osalejalt süsteemile. Seetõttu pakun publiku kaasatuses toimunud muutuste käsitlemiseks ja uurimiseks välja mõiste „osalusjärgsus“ (*post-participation*), mis aitab rõhutada muutust kunstiteose ja publiku vahelises suhtes. Pärast mitme termini kaalumist ja proovimist jõudsin osalusjärgsuse mõisteni, mis praeguse uurimistöö raames pakub kõige täpsemaid ja sobivamaid kirjeldusi. Minu kui uurija ja kunstniku jaoks on osalusjärgsus kasulik termin, sest võimaldab mul mõista oma loomingu arengut publiku kaasatuse seisukohast. Osalusjärgsuse mõiste aitab kirjeldada, analüüsida ja lõpuks ka kontekstualiseerida kunstiloomingut publiku kaasatuse ja interaktiivsete süsteemide osaluspõhise sisendi vaatepunktist. Osalusjärgset teost eristab interaktiivsest publiku suhe kunstiteosega. See suhe ei ole interaktiivsele kunstile omaselt aktiivne ega reageeriv, vaid passiivne. Teisisõnu, osalusjärgne teos vähendab vaataja aktiivset rolli. Osalusjärgne kunst vastab teistsugusele sisendile: tegeliku aja andmetele, mida loob inimeste või loomade argikäitumine.

See termin on ühtlasi poliitiliselt laetud, võimaldades kunstnikel sellel andmejälitusajastul privaatsuse küsimust puudutada. Osalusjärgsus on suuresti seotud jälgimisajastuga, kus ühiskond on leppinud kaamerate ja algoritmide pideva järelevalvega. Tänapäevane jälgimiskultuur toodab vuajerismi ja ekshibitsionismi, millest nüüdseks on saanud tavanähtus. „Järelevalve on 21. sajandi hakul muutunud argielus tavapäraseks kogemuseks ja tegevuseks.“ (Ozog 2010: 95) Haggerty ja Ericson (2006) leiavad, et „järelevalve ümbritseb meid küll kõikjal, kuid sellest on peaaegu võimatu sidusalt rääkida, sest see on erisugune, mitmekülgne ning seda kasutatakse väga erinevates olukordades.“ Ozogi arvates täidavad tehnoloogiaga töötavad kunstnikud

seega olulist rolli, kuna suudavad „tänapäevase elektroonilise järelevalve strateegiaid, poliitikat ja ideoloogiaid dekonstrueerida ja õõnestada." Teisisõnu aitavad kunstnikud, kes rakendavad ja mõtestavad jälgimistehnoloogiaid, meil mõista järelevalve taset ja olemust tänapäeval. Seetõttu pean oluliseks uurida jälgimisajastule omaseid osaluse passiivseid avaldumisvorme. Sellepärast ei kutsu ma tahtmatut ja mitteteadlikku osalust mitte avardunud, hübriidseks ega süsteemi interaktsiooniks, vaid osalusjärgsuseks. See mõiste panustab ulatusliku andmejälituse ajastule omaste varjatud osalusvormide uurimisse ja kontekstualiseerimisse. Maciej Ozog (2010: 97) väidab, et „vaatamine ja vaadatud olemine on jälgimiskultuuris osalemise eeldus."
Tänapäeval on passiivsus norm ja siinses uurimuses väljatoodud kunstiteosed rõhutavad seda osalusjärgsuse abil: vaataja osaleb seda teadvustamata ja tähelepanu on suunatud interaktiivsele süsteemile, mis kasutab osalusjärgset sisendit publiku nõusolekuta. Lühidalt öeldes tegeleb see doktoritöö osalusjärgsuse kui mõiste määratlemise ja kontekstualiseerimisega, vaadeldes selle päritolu ning interaktiivse kunsti jaoks kriitilist ajavahemikku, võrreldes osaluspõhist, interaktiivset ja osalusjärgset kunsti ning ammutades viimaks ka jälgimisajastu paradigmast.

Käesolev doktoritöö esitab järgmised uurimisküsimused.

– Mis on osalusjärgsus?

– Miks kasutan osalusjärgsust mõningate oma teoste puhul?

– Kuidas erineb interaktiivne teos osalusjärgsest teosest?

– Miks on osalusjärgsus (interaktiivse) kunsti kontekstis oluline?

– Kuidas on publikuosalus ja interaktsioon mu loomingus muutunud?

Nimetatud uurimisküsimused väljendavad eesmärki mõista kunstiteose osaluse määra ja selle interaktiivset süsteemi. Eesmärk on ühtlasi luua eristus interaktsiooni ja osalusjärgsuse vahel ning seeläbi kontekstualiseerida osalusjärgsus interaktiivse kunsti ja üldisemalt nüüdiskunsti raamistuses. Enda loomingut ja seonduvaid teoseid uurides käsitlen selles doktoritöös üksikasjalikult vahetut ja kaudset osalusjärgsust.

Võttes arvesse eri uurimismetodoloogiad, näen ennast uurijana, kes vaatab seda teemat läbi tegevkunstniku silmade ja viib läbi altpoolt või täpsemalt seestpoolt lähtuvat uurimust. Kui ma ei oleks kunstnik, ei oleks ma ka teadlane. Teisisõnu, see uurimus on olemas ainult minu loomingu raames. Tegevkunstnikuna olen selles doktoritöös otsustanud rakendada loomeuurimuse metodoloogiat, mis lubab mõtiskleda interaktiivsete ja osaluspõhiste protsesside üle.

Interaktiivses kunstiteoses esinevaid suhteid aitab kujutada joonis 1, mis naaseb interaktiivse kunsti klassikalise määratluse juurde, millele selles töös on viidatud kui „vahetule interaktsioonile publikuga". Oluline on mõista, et publiku sisend on vastavuses kunstiteose väljundiga. Teisisõnu, kunstiteos peaks vastama vaataja mingile kindlale tegevusele. Publikuga interaktsioonis olemine on interaktiivse kunstiteose tuum ja olemus. Lozano-Hemmer leiab: „Mu teoseid ei ole olemas, kui ei ole kedagi, kes neile aega pühendaks." (Ranzenbacher 2001) Või nagu Anne-Marie Duguet on kirjutanud: „Interaktiivne kunst muudab vaataja operaatoriks". (Duguet 1996: 147) Selle taga asub kunstnik, kes loob ja programmeerib kogu selle kohaneva keskkonna ja kogemuse. Kwastek jõuab valdkonda määratledes kaasatuse osas samale järeldusele: „Digitaalseid kunstiteoseid, mis nõuavad, et osaleja teeks midagi rohkemat kui puhtalt vaimne vastuvõtt, nimetatakse „interaktiivseks kunstiks"."

(Kwastek 2013: 4)

Interaktiivse kunsti juured on küll üsna hajusad (Kluszczynski 2013, Dinkla 1996), kuid selle välja teerajajaid on kerge tuvastada: näiteks Myron Krueger, David Rockeby, Christa Sommerer ja Laurent Mignonneau, Monika Fleischmann ja Wolfgang Strauss, Jeffrey Shaw ja Masaki Fujihata. Nende kunstike looming oli tehnoloogiliselt väga kõrgetasemeline ja seda peeti 1980. ja 1990. aastatel tehnoloogiliseks imeks. Need teedrajavad kunstnikud rakendasid ja arendasid tihti ise välja keerulisi digitaalseid süsteeme, et publikule uudseid interaktiivseid liideseid luua. On muljetavaldav näha, kuidas need visionäärid tehnoloogiat proovile panid, et loominguga väljendada oma seisukohta publikuga interaktsioonis olemise ja teose avatud vormi kohta.

1980. aastate alguses olid kunstnikud valmis publikut interaktiivse süsteemiga suhtlema panema. Interaktiivset kunsti hakati rohkem tunnustama 1990. aastal, mil Prix Ars Electronica sellele eraldi kategooria pühendas (Kwastek 2013: 8). Pöördeline hetk oli 2004. aasta, mil Golden Nica määrati Mark Hanseni ja Ben Rubini teosele „Kuulamispost" (2001), millel puudus publiku kaasamist eeldav interaktiive element. See juhtum käivitas arutelu interaktiivse kunsti määratluse ja olemuse üle. Prix Ars Electronica ajalugu näitab lõpuks, kuidas interaktsiooni mõiste sisu on proovile pandud ja avardatud. Näiteks 2016. aastal avaldas Prix Ars Electronica kategooria „Interaktiivne kunst+" kohta selgituse, öeldes et interaktiivne kunsti on liikunud vahetust interaktsioonist edasi ning kunstnike huvi on pöördunud ühiskondlike ja poliitiliste teemade poole ning interaktsioon on muutunud valdavaks. Uutest liidestest vaimustumine pole enam ajakohane (De Jaeger et al 2016).

Interaktiivse tehnoloogia ja interaktsiooni kui külgetõmbava meetodi kaubastumine ja kõikjalolek on täiendav põhjus kunstnikele uurida muid publiku ja süsteemidega interaktsioonis olemise võimalusi. Ärihuvi interaktiivse kunsti vastu avaldub paljudes näidetes, kus korporatiivsed brändid on interaktiivseid kunstiteoseid jäljendanud ja matkinud. Näiteks Clara Boj ja Diego Díazi loodud lahendust installatsioonile „Täiendatud tegelikkuse võlusüsteem" (2007), mis vahetas vaatajate nägusid, kasutati 2016. aastal Snapchati näovahetusel põhinevas Netflixi kampaanias ning sarnaseid näiteid on veel. Lisaks sellele on interaktiivse kunsti näituseid arvustatud mitmel moel, nõudes kriitilist lähenemist ja vähem meelelahutust, olles selle välja kinnistumise ja tasakaalustumise käivitaja. Publik on hakanud väärtustama kunsti mõtet ja neid ei pimesta enam esitletav tehnoloogia ja uued liidesed. Samas interaktsioon ei mõju ka kunstnikele enam ligitõmbavalt, neid huvitab rohkem teose sisu ja seda saatev mõte, väljendades ühtlasi valdkonna küpsust.

Interaktiivsuse kaubastumine ja järelevalve kasv digijärgses ühiskonnas väljendub ka kunstis. Poliitilist sõnumit kannab jälgimistehnoloogia ja meetodite kasutamine kunstis ja ebavõrdne võimusuhe, kui publikul ei lasta valida, kas osaleda või mitte. Näiteks David Rokeby teos „Nimeandja" (1991–) väljendab „toimimisvõime ja kontrolli teemasid" (Huhtamo 1998), kus süsteem juhib publikut, kes ei ole teadlik enda rollist kunstiteoses. Huhtamo jätkab: „Kui interaktiivsus eeldab aktiivset osalust, teadliku suhet küberneetilise süsteemiga, siis mõlemat subjektiseisundit (jälgija/ jälgitav) võib kirjeldada interaktsiooni vastandina. Ühiskonnas, mida valitseb meedia ja järelevalve, on need väidetavalt valitsevad rollid." (Huhtamo 1998)

Jälgimiskapitalismi ajastu, mille termini Shoshana Zuboff lõi 2015. aastal, suunab ja kontrollib meie käitumist. See sõna viitab asjaolule, et kasutajaid jälgitakse raha teenimise huvides. Meie andmete abil õpitakse tundma, kes me oleme ja mis meile meeldib, selleks et meile suunatud reklaame näidata, kusjuures meie käitumine on osutunud väga etteaimatavaks ja isegi programmeeritavaks. Ericson ja Haggerty rõhutavad, et „tehnoloogiline areng, olemata küll ainumäärav, on olnud erakordselt oluline uute järelevalve vormide esile kerkimises." (Ericson ja Haggerty 2006: 4) Veelgi enam, nad leiavad, et „järelevalve võim kasvab kiirenevas tempos, kusjuures iga uus areng võib olemasolevat jälgimismahtu kordades kasvatada." (Ericson ja Haggerty 2006: 19) Järelevalve võim on kasvanud sedavõrd suureks, et seda on hakatud kasutama psühholoogilises sõjapidamises. Näiteks kahtlustatakse, et Cambridge Analytica arendas välja algoritmi, mis ühismeedia vahendusel suutis mõjutada Brexiti rahvahääletust ja aitas Donald Trumpil USA presidendiks saada (Cadwalladr 2018).

Osalusjärgsuse mõiste võimaldab jälgimisajastuga kaasnevate passiivsete osalusvormide käsitlemist, mis on põhjus, miks seda tahtmatu või mitteteadliku osaluse, avardunud, hübriidse või süsteemi interaktsiooni asemel osalusjärgsuseks kutsuda. Eesmärk on uurida ja kontekstualiseerida ulatusliku andmejälituse ajastu varjatud osalusvorme.

Osaluspõhiste, interaktiivsete ja osalusjärgsete teoste paremaks eristamiseks on loodud tabel 1, mis analüüsib iga kunstiteost mitme näitaja abil. Osaluskunsti esindab Rirkrit Tiravanija „Nimeta (tasuta/endiselt)" (1992–), interaktiivset kunsti Rafael Lozano-Hemmeri „Kehafilmid" (2001) ja osalusjärgset kunsti Mark Hanseni ja Ben Rubini „Kuulamispost" (2001). Eelkõige huvitas mind publiku roll, kas osalust teadvustati, mil määral sõltus kunstiteos publiku sisendist, kes oli toimija, kus on tähelepanukese ja millist interaktsiooni kasutati. Huvitaval kombel oli osaluspõhistel ja interaktiivsetel teostel omavahel rohkem sarnasusi kui interaktiivsetel ja osalusjärgsetel teostel, mis selgitab vajadust omaette termini järele, mille abil publiku osalust teadlikult vähendavaid kunstiteoseid kirjeldada. Osaluspõhiste ja interaktiivsete teoste puhul on rõhk aktiivsel publikul, kes osaluse ja interaktsiooni abil teost vormib. Nende kahe valdkonna erinevus seisneb interaktsiooni vahetu mõju määras ja liigis. Osalusjärgse teose puhul mängib keskset rolli süsteem, mis ei eelda publikult teadlikku ja teadvustatud interaktsiooni, vaid pigem valib sisendi, mis ei vaja publiku nõusolekut. Lühidalt, see tabel aitas nende kolme välja vahelisi sarnasusi ja erinevusi mõista ning pakkus võimaluse sellesse töösse kaasatud kunstiteoste analüüsimiseks.

Osalusjärgsuse selgitamiseks on selles töös välja töötatud joonis 2, mis kujutab autori, kunstiteose, publiku ja osalusjärgse sisendi omavahelist suhet. Viimane avaldub andmete või kujutistena, mis põhinevad inimeste või loomade tegevusel, kes ei ole teadlikud oma osalusest kunstiprotsessis. Kuna vahetu interaktsioon puudub, siis ei ole publikul võimalik kunstiteost mõjutada. Seega on vaatajale pakutud jälgija roll, kes kunstiteose väljundit vaatab. Kunstniku valitud interaktiivses süsteemis mängib osalusjärgne sisend passiivset rolli ja toimib ühesuunaliselt. Ainuke kahesuunaline seos oli autori ja kunstiteose vahel, järgides interaktiivse teose kolmnurgaga sama loogikat. Lühidalt öeldes on osalusjärgsus suhe, mis toimib tegelikus ajas ilma vaataja ja andmelooja kontrollita. Osalusjärgsus rõhutab, et meil ei ole võimu otsustada oma osaluse ja andmete üle. Meta- ja ühismeedia andmeid võib teisisõnu kasutada eri eesmärkidel, sh kunstiteoses, ilma andmete omaniku ja/või loojate teadmata.

See doktoritöö eristab vahetut ja kaudset osalusjärgsust. Kummalegi on pühendatud selgitav joonis (joonised 6 ja 7), et täpsustada nende kahe kategooria erinevust. Kaudse osalusjärgsuse puhul asub osalusjärgne sisend väljaspool näitusesaali. See tähendab, et teose sisend ja väljund on füüsiliselt lahus. Publik ei saa kunstiteost isegi passiivselt mitte korraga tajuda ja mõjutada, kuid vahetu osalusjärgsuse puhul on see võimalik. Teos, publik ja osalusjärgne sisend jagavad ühte aega ja ruumi. See tähendab, et kunstiteose juhtsüsteem muudab publiku nende teadmata või nõusolekuta oma sisendiks. Ometi on näiteid, kus sisend ei pärine publikult. Vahetuks osalusjärgseks sisendiks võivad olla ka loomad, kui nad on osa kunstiteosest, nagu teoste „Viirpapagoi valss" ja „Rändkalad" puhul. Tahaksin rõhutada, et ma ei pea loomi publikuks, vaid toimijateks, kes kunstiteosele vahetut osalusjärgset sisendit loovad. Loomad on kunstiteose osa, mitte selle publik. Seega osalevad loomad loomingulises ja uurimuslikus protsessis.

Olen jaganud oma loomingu, mis on seotud selle doktoritööga, kahte kategooriasse. Teosed „Linnarütm", „São Paulo rütm" ja „Läänemere raadio" esindavad kaudset osalusjärgsust ning teoseid „Andmetorn", „Viirpapagoi valss" ja „Rändkalad" on kirjeldatud vahetute osalusjärgsete kunstiteostena. Oluline on mainida, et esmalt sündisid kunstiteosed ja terminoloogiani jõudsin hiljem. See uurimus põhineb suuresti mu enda loomingul, kuigi viimane näide tõukus uurimistööst, näiteks „Viirpapagoi valss" ja „Rändkalad" olid katsetused, mis uurisid vahetu osalusjärgse sisendi ja loomade seost kunstiteoses.

Teosed „Linnarütm" ja „São Paulo rütm" uurisid, kuidas elurütmi kirjeldamisel kunsti ainesena asukohatuvastusega ühismeediat kasutada. Need teosed rõhutavad ühtlasi kaduvat piiri virtuaalse ja füüsilise vahel ning võimaldavad mõtestada linnaruumi ümber digitaalse elurütmi abil. Kui „Linnarütm" käsitleb kümne metronoomi abil kümmet linna, siis „São Paulo rütm" peegeldab ainult ühe koha elurütmi. Kunstnikuna olin äärmiselt elevil, et ühe metronoomi abi on võimalik väljendada linna digitaalset elurütmi, mis koosneb selle asukoha digitaalsetest asukatest tegelikus ajas. Teose lahterdamist kaudsena seletab asjaolu, et teos ei ole seotud näituse füüsilise asukohaga, vaid toimub valitud asukohtade ühismeedias.

Seotud kunstiteosed näitasid, et ka teised kunstnikud tunnevad huvi ühismeedia andmete kasutamise vastu kunstis. Näiteks Hanseni ja Rubini teos „Kuulamispost“ on üks varasemaid näiteid sellest, kuidas foorumitest on kunsti nimel andmeid korjatud. Lõpuks ei ole ühismeedia, näiteks Twitter, loojate jaoks paljalt noodikirjaks, vaid see lähenemine näitab pigem kunstnike antropoloogilist huvi ja soovi rõhutada tänapäeval toimuvat andmejälitust. „Läänemere raadios“ on kasutatud AIS-radarit, et tegelikus ajas laevade liikumist jälgida – tulemuseks on keerukad ruumisuhted ning kohaliku mereliiklusega seotud helitaust. Kunstiprojekt uurib veebiandmate kogumise asemel füüsilist jälgimisseadet ning heli kasutamist kunsti ainesena.

Vahetute osalusjärgsete kunstiteoste puhul on kaamerat tihti kasutatud süsteemi digitaalse pilguna, mille eest publikul ei ole pääsu. Vahetu osalusjärgsuse peatükis arutletud tööde seas on ühine joon publiku võimetus vahetu osalusjärgse kunstiteose puhul interaktsiooni ohjata. See tähendab, et tähelepanu ei ole mitte publikul, vaid süsteemil. Mõned teosed, näiteks Lozano-Hemmeri „Suumi paviljon“ (2015), toovad väga ilmekalt esile selle, kuidas süsteem vaatajat valitseb. Kunstnikud on jälgimistehnoloogiat kasutanud nii galeriis kui ka avalikus ruumis. Peamiselt on kasutatud kaameraid, mis toimivad kujutissisendina üha võimsamatele algoritmidele, mis suudavad jälitada ja tuvastada. Deleuze’i (2007) kirjeldatud kontrolliühiskond on meie tegelikkus, mida tehnoloogiline areng märgatavalt toetab ja soodustab.

Huvipakkuvate alade skannimise meetodit on kasutatud „Andmetornis“, mis kandis inimeste liikumise väljakul joonte ja värvide abil vastavale tunnilõigule obeliskil. „Rändkalade“ lahenduses on kasutatud võimsaid kaamera- ja jälitusalgoritme, mis jälgisid akvaariumikalu ja kaardistasid nende teekonna Google Street View’s. „Viirpapagoi valss“ jäljendab nutikodu keskkonda: linnumajja on paigaldatud andurid, mis salvestavad linnu kõik sisse- ja väljalennud, muutes need klaveripalaks. Viimases kahes osalusjärgses teoses on osaleja roll antud kaladele ja lindudele ning vaataja on vahetu osalusjärgsuse tunnistajaks. Kui kaudse osalusjärgsuse puhul võib osalus näitusesaalist eraldatuse pärast abstraktsena tunduda, siis vahetu osalusjärgsus tõi selle protsessi publikule palju lähemale.

Kokkuvõttes ühendasid selles doktoritöös esitletud teoseid mitmed ühisjooned. Üks oli asukohapõhisus ja elurütm ühes või mitmes paigas. Teine ühisjoon oli argipäeva põhjal kunstiteose loomine. Elurütmi väljendamine oli omane kõikidele sellesse doktoritöösse kaasatud teostele, välja arvatud „Rändkalad", mis rääkis seotud teemast – digitaalsest vuajerismist. Lisaks otsisid esitletud kunstiteosed tööriistu ja protsesse, mille abil kunstiteosesse publiku passiivset osalust kaasata ja seeläbi uusi osalusjärgseid lähenemisi luua. Leian, et osalusjärgsuse termini kasutuselevõtt on põhjendatud. Olen nüüd märksa teadlikum sellest, kuidas kunstnikuna rääkida publiku rollist oma loomingus. Mõistan, mis toimub kunstiteose sisemises interaktiivses süsteemis, ning oman vahendeid nende protsesside kontekstualiseerimiseks. Veelgi olulisem: see loomeuurimus panustab kunstivälja arengusse, analüüsides süvitsi kahte kategooriasse – vahetuks ja kaudseks – jagatud osalusjärgsust, mida on interaktiivsete ja osaluspõhiste kunstiteoste suhtes kontekstualiseeritud ja nendega võrreldud. Lisaks pakub see doktoritöö vahendeid kirjeldamaks ja analüüsimaks kunstiteoseid, mis väljendavad võimu liikumist publikult süsteemile, vähendades tahtlikult osaleja rolli.

Mõistan samas kunstiteoste hübriidset olemust ja olen kogenud seda oma loomingus. Nagu mainitud, on kunstiteost keeruline interaktiivse, osaluspõhise, osalusjärgse, genereeriva, netikunsti või millegi muuna liigitada, sest see võib kuuluda nende kõigi alla. David Rokeby on kirjutanud: „Kõik interaktiivsed süsteemid vajavad mingil määral järelevalvet. Järelevalvega nõustumine on sisenemistasu mitmete interaktiivsete ja isikupärastatud teenuste kasutamiseks." (Rokeby 2010)

Kuid järelevalve ja andmejälituse ajastul on privaatsus muutunud oluliseks teemaks ning see väljendub ka mitmetes poliitilise sõnumiga teostes nagu näiteks SpY „Kaamerad" (2013), Mogens Jacobseni „Demokraatlik pimestaja" (2015), Michelle Terani „FRILUFTSKINO: katsetused vabaõhujälgimiskino vallas" (2007), Julian Oliveri ja Danja Vasilievi „Mehed hallis" (2009–2014) ning paljud teised. „Meie jälgimiseks on väga erinevaid põhjuseid ja need ulatuvad – nagu lähenemised kunstis – väga vormilisest väga poliitiliseni erakordselt sümboolsete tegudega seaduse piire nihutades." (Moulon 2018: 177) Lakkamatu järelevalve ajastu on loonud lõpuks tugevalt kontrollitud ühiskonna nähtamatute seinte ja jälgijatega ning see peegeldub ka kunstiteostes, kus juhtohjad on võtnud enda kätte masinad ning publikule on jäetud passiivne roll. Just huvide ja rollide muutumine on põhjus võtta kasutusele osalusjärgsuse mõiste, mis aitab kirjeldada publiku passiivset rolli ja kunstniku eesmärke. Viimane osutus oluliseks mu enda teoseid ja ka seonduvaid teoseid analüüsides.

Nagu varem rõhutatud ja nagu mu teoste sisu mõista annab, huvitab mind aktiivse publikuosaluse passiivseks muutmine. See strateegia peegeldab jälgimisajastut, kus oleme kaotanud kontrolli oma andmete üle ja oleme leppinud sellega, et meid ärieesmärgil jälgitakse, analüüsitakse ja meie samme ette ennustatakse. Selle paradigma on kehtestanud jälgimiskapitalism, mis muudab meie interaktsiooni ja osaluse suurettevõtete sissetulekuallikaks. Seetõttu on kunstnikud interaktsiooni ja osaluse ülistamise asemel hakanud sellesse palju kriitilisemalt suhtuma, et puudutada tänapäeval olulisi küsimusi, nagu andmejälitus, järelevalve, digijärgne ajastu, nutikodude ja nutistu ehk asjade interneti abil inimeste järele luuramine jne.

Lisaks annab käesolev doktoritöö oma panuse interaktiivse kunsti arendamisse, analüüsides ja kontekstualiseerides publiku passiivset osalust osalusjärgsuse kujul. See doktoritöö väidab, et osalusjärgsuse mõiste aitab käsitleda nihet aktiivselt vaatajalt passiivsele keerulisel andmejälitusajastul, mil inimestelt nõusolekut küsimata neid pidevalt jälgitakse, jälitatakse ja vaadeldakse.

Kokkuvõttes võime öelda, et tehnoloogiline ajastu on kunstis publiku osalust tugevalt mõjutanud. Digitehnoloogia tulekuga on hakatud interaktsiooni olemust uurima. Tänasel andmejälitusajastul on aktiivne publikuosalus teisenenud passiivseks. On toimunud nihe inimese ja arvuti vaheliselt interaktsioonilt süsteemidevahelisele interaktsioonile. Esiplaanil on süsteemi võim ja tagaplaanil abitu publik. Selline muutus on ilmselgelt ühiskondlikult ja poliitiliselt laetud ning seetõttu on osalusjärgsus uut tüüpi osalus, mille praegune digijärgne ajastu on kaasa toonud.

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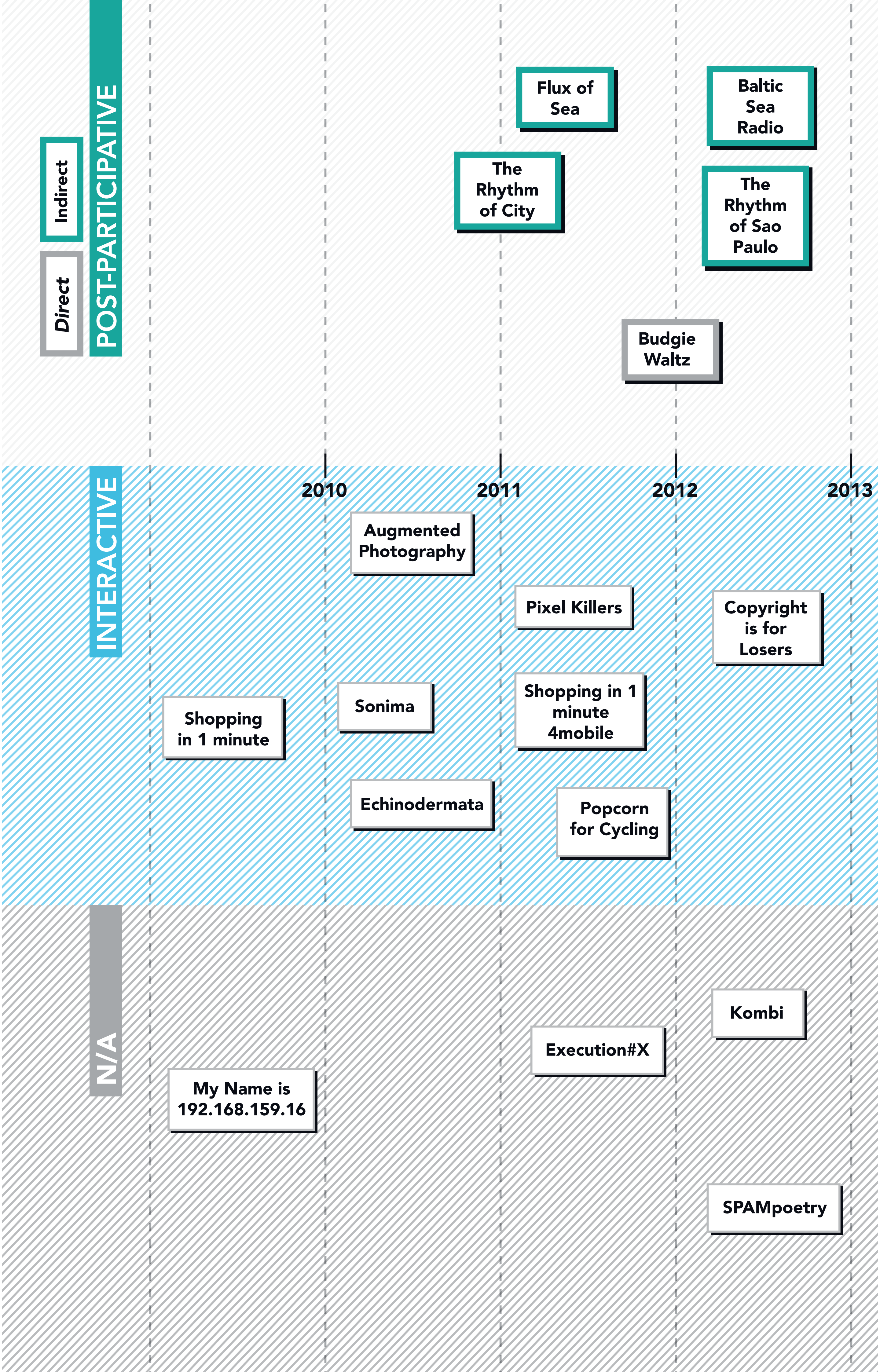
8. LIST OF FIGURES

Chapter 3

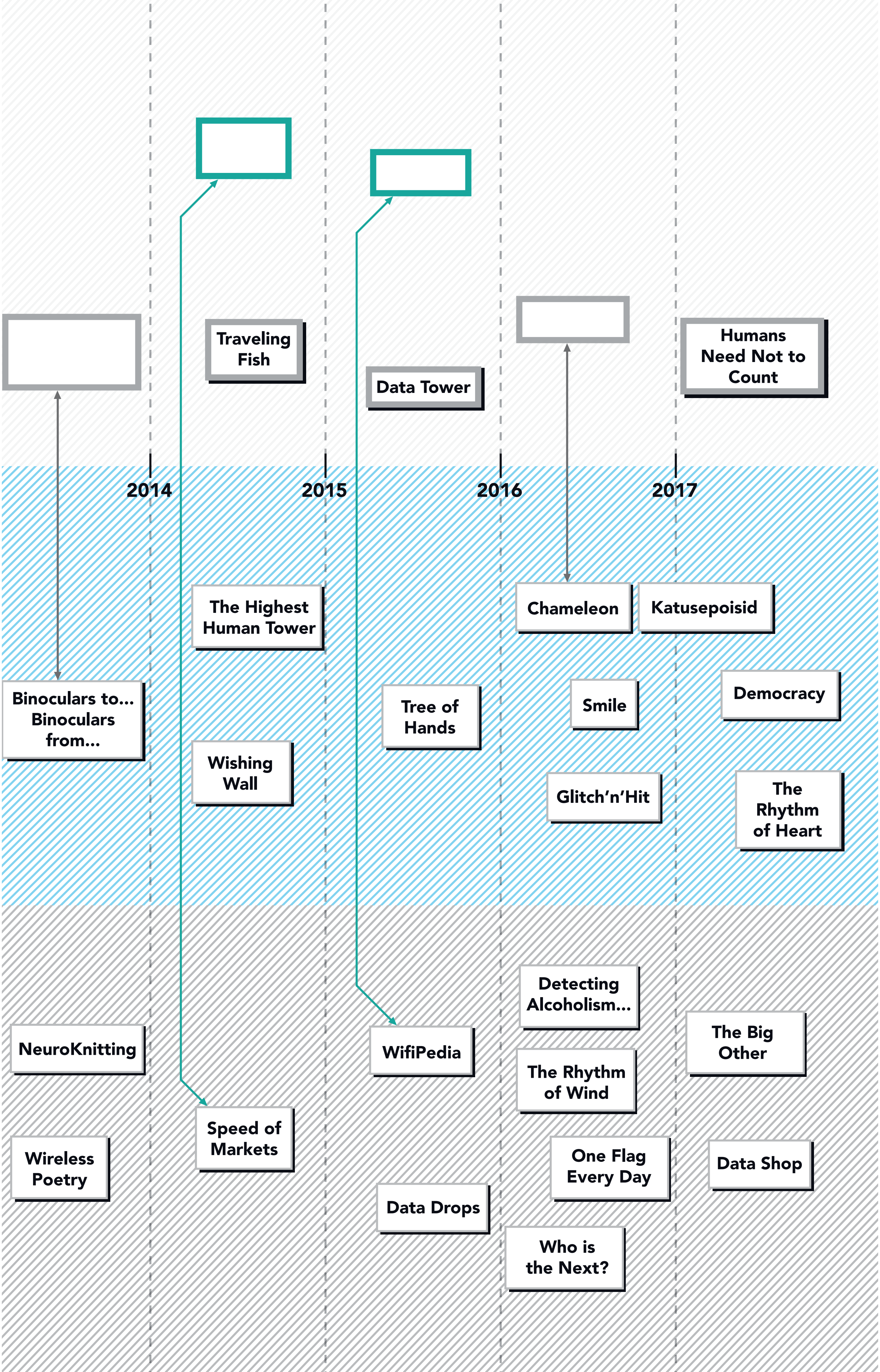
Chapter 4

9. APPENDIX

PRACTICE TIMELINE



POST-PARTICIPATIVE
Indirect
Direct
INTERACTIVE
N/A
2010
2011
2012
2013
Flux of Sea
Baltic Sea Radio
The Rhythm of City
The Rhythm of Sao Paulo
Budgie Waltz
Augmented Photography
Pixel Killers
Copyright is for Losers
Shopping in 1 minute
Sonima
Shopping in 1 minute 4mobile
Echinodermata
Popcorn for Cycling
Kombi
Execution#X
My Name is 192.168.159.16
SPAMpoetry


Traveling Fish
Data Tower
Humans Need Not to Count
2014
2015
2016
2017
The Highest Human Tower
Chameleon
Katusepoisid
Binoculars to... Binoculars from...
Tree of Hands
Smile
Democracy
Wishing Wall
Glitch'n'Hit
The Rhythm of Heart
Detecting Alcoholism...
NeuroKnitting
WifiPedia
The Big Other
The Rhythm of Wind
Speed of Markets
One Flag Every Day
Wireless Poetry
Data Shop
Data Drops
Who is the Next?

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