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Environmental Artistic Research: A Case Study

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Abstract

While trying to depict contemporary reality as accurately as possible, some artists conduct researches that, although not considered scientific, actually provide valuable data. This thesis analyzes a case of artistic research that addresses environmental issues, and investigates on the type of knowledge it conveys. The research is divided in three parts. While relying on diverse authors, the first part gives some definitions of the concept of artistic research. Then, it investigates the relationship between artistic research and academic research, as the former still struggles to receive a recognition among scholars coming from more traditional disciplines. In particular, I compare artistic research with scientific research. The final part sorts out what features are demanded of artistic research, for it to be considered able to convey knowledge. The second part of the thesis is dedicated to a case study of artistic research: the DataFusion Instrument (DFI), presented inside the Dutch pavilion on show at Triennale Milano 2022, designed by a group of students from the ArtScience Interfaculty of The Hague. After a contextualization in time and space, and a presentation of the stakeholders involved, the creation process is described in details. Since the DFI is a tool aimed at facilitating the understanding of the non-human, the final chapter provides some key concepts of ecology, meant to sustain the utility of the instrument as an efficient way of conveying scientific concepts to a non-scientific audience. Furthermore, a paragraph seeks to frame the DataFusion Instrument into an art historian perspective. Finally, drawing on the considerations made in the first chapter, the case study is analyzed from an aesthetic perspective.

Contents

Abstract	3
Contents	5
Introduction	7
Chapter 1. What Is Artistic Research?	11
What is artistic research?	11
The relationship between artistic research and academic research	14
Scientific research, or what artistic research is not	25
Addressing cognitivism: can art convey knowledge?	29
Chapter 2. Case Study.	39
Case study: Have we met? The Dutch Pavilion presented for 2022 Triennale Milano	39
Triennale Milano	40
Het Nieuwe Instituut	45
Have we met? Humans and non-humans on common ground	47
DataFusion Instrument	51
Chapter 3. A Multidisciplinary Analysis	63
The DataFusion Instrument as seen through multidisciplinary lenses: the ecological perspective	63
The DataFusion Instrument as seen through multidisciplinary lenses: the anthropological perspective	72
The DataFusion Instrument as seen through multidisciplinary lenses: the art historical perspective	80
Is the DataFusion Instrument an example of research art?	87
Conclusions	99
Appendix I	103
Interviews	103
Appendix II	131
Figures	131
Bibliography	135
Sitography	143

Introduction

The role of the artist has changed eminently throughout history. The concept of “artist”, itself, emerged only starting from the Romantic age. This notion became widespread when painters, architects, sculptures, etc. started to separate from the commissioning system, and began to produce works without following the precise instructions of clients. Throughout the 20th century, in particular, artists assumed a more and more a political role, to the point that it is nowadays quite standard to associate the notion of contemporary art with that of art dealing with contemporary issues.

Considering the complexities and contradictions of the present, many contemporary artists engage in researches that they present in creative ways. In art schools, but also within academia, their approach is referred to as “artistic research”. Perhaps the biggest of the challenges that the present calls us to face is the ecological crisis: human beings must learn how to live in a healthy and interdependent relationship with other beings on Earth. Many contemporary artists, indeed, seek to spread this message around the public, in accordance with the role that the society pinned on them. This thesis, seeks to analyze the phenomenon of artistic research, focusing on environmental artistic research.

The first chapter addresses the question of what artistic research is and what it consists of looking at various definitions of this concept. I thus consider some accounts from recent scholarship on the study of research art, mostly seen under a philosophical lens. To facilitate the understanding of the thin differences between the various interpretations of research art, I provide the reader with some examples, which are either made-up, or taken from the history of the arts, or taken from personal experience.

As the field of artistic research is still quite unknown to many, in the first chapter I also consider its relationship to more traditional academic research. Firstly, I point out the reasons why this field struggles to get acknowledged among scholars, and I trace the similarities and divergencies between artistic research and academic research. Secondly,

to distinguish artistic research from it, I look at scientific research, relying on Samir Okasha's *Philosophy of Science: A Very Short Introduction* (2006) to cast light on the main features of scientific research.

The final part of the first chapter is the most philosophical, and it is central for the further development of the thesis. Here, I try to answer the crucial question of whether art can convey knowledge. Importantly, I ask whether art can provide some form of knowledge that can be shared among different people, a kind of knowledge that goes beyond the mere personal experience of an artwork.

The second chapter provides an overview of a case study of artistic research that deals with environmental issues. I analyze the work *DataFusion Instrument*, presented by a group of selected students of the ArtScience interfaculty degree of the University of the Arts (The Hague) within the Dutch Pavilion *Have we met? Humans and nonhumans on a common ground*, part of the Triennale Milano 2022 exhibition titled *Unknown Unknowns*. As I participated in the production project for the pavilion, I took the opportunity to get some insights on the development of the project, talking with the makers of the work and getting access to unpublished material.

In the chapter, I first introduce the Triennale Milano, and especially its 2022 edition. Secondly, I present Het Nieuwe Instituut, namely the Dutch institution in charge of the organization of the pavilion. Thirdly, I give an overview on the pavilion *Have we met? Humans and non-humans on a common ground*. Importantly, I describe the Zoöp methodology, which provides the background to understand how the pavilion has been organized, and why it focuses on the relationship between human and non-human entities. Finally, I describe the *DataFusion Instrument* in detail: who are the artists involved in the project, which process did they follow for the realization, how the project resulted in the final design of the artwork.

The third and last chapter of this work seeks to provide different ways to interpret the *DataFusion Instrument*. First, I look at the strong ecological imprinting of the whole project: after introducing ecology, which is a quite recent discipline, I define what an ecosystem is and what characterizes it. In this of the chapter, I try to clarify how all the species on Earth, included the human species, are interdependent on each other. In this regard, I present ecosystem services as a tool used by ecologists to convey the idea that our survival depends on nature and on the products it gives us. I then make a comparison between ecosystem services and the *DataFusion Instrument*.

In the second section of the chapter, I look at the *DataFusion Instrument* from an anthropological perspective, relying on the theory put forward by Bruno Latour in *Down to Earth* (2018). This essay, was an inspiration for the artists working at the *DataFusion Instrument*, who sought to embody the values it discusses in their work. In the third section, I analyze the *DataFusion Instrument* from an art-historical perspective. In particular, I maintain that the artwork drew much on the archival tradition, as it can be inferred not only from its appearance, but also from the methodology adopted in the process of its realization.

The fourth and final section tries to answer the last, crucial question at the core of this thesis: does the *DataFusion Instrument* provide knowledge? To look for an answer, I go back to the views on artistic research presented in the first chapter, I identify those definitions of artistic research that best suit the *DataFusion Instrument*, I consider in which way the work might help us understand the world differently, and provide some criteria to assess its effectiveness. The last part of the thesis, Appendix I, consists in the transcriptions of the interviews I conducted with some members of the *DataFusion Instrument* team, which have been crucial for my analysis of this case study.

Chapter 1. What Is Artistic Research?

What is artistic research?

According to Hans Borgdorff, who is one of the most authoritative voices in the debate on artistic research, it is sometimes very hard to distinguish art practice, in general, from the more specific practice of artistic research, especially in the context of art schools (Borgdorff, 2012, p.22). Moreover, there are different opinions on how broadly we should use the concept; however, there seems to be an agreement on the distinction among three levels of analysis of artistic research: research *on* the arts, research *in* the arts and research *through* the arts (Borgdorff, 2012, p. 24). Those three labels do not designate objects that are entirely separated from one another; on the contrary, they are all necessary in order to have a more articulated view on the practice of artistic research. Even if there is agreement on this three-partition, yet every author has a personal perspective and gives different nuances to the meaning of the prepositions *on*, *in* and *through*. According to Borgdorff, research *on* the arts refers to the analyses and reflections made upon the objects and events constituting complete works of art or the materials employed by artists in the making of artworks. The other two terms, instead, refer to the research required by the art production process (research *in* the arts) and to its reception and its integration in the art world (research *through* the art) (Borgdorff, 2012, p. 23-24).

Here, it can be useful to look at some examples. Consider an artist who is interested in studying the importance of the ecology of oysters for the life of a lagoon. He or she makes an installation which shows in a schematic way the lifecycle of the oysters and their benefits for the environment. Research *on* the arts, in this case, might consist in observing the materials employed in the artist's work: the wooden structure that supports the installation, which colors have been chosen, the way in which all the elements have

been arranged, etc. As for research *in* the arts, in this case it might consist in the research the artist conducted to learn about oysters: which readings were consulted, to whom the artist talked with, which places he or she visited, etc. Finally, as for research *through* the arts, it could consist in considering the artistic outcome of this research-based work, both in terms of reception by the public (how people react while looking at it, what are their feedbacks, etc.) and in terms of integration in the art world (is it something that was already done before? If yes, is it worth comparing it with something similar? Does it contribute to the development of the arts?). To summarize: Borgdorff claims that artistic research can be done *in* the art (focusing on the objects presented by artists), *on* the art (focusing on the process and the making of art), *through* the art (focusing on the context and impact of a given artwork).

Christopher Frayling was the first to adopt a three partitioned approach to tackle artistic research. In his essay “Research in Art and Design”, published in 1993, he argues that the popular images of the artist and of the designer (the first one as a romantic, impulsive maker of art, the second one as a superficial individual, obsessed with style) neglect the research tradition and the methods that they actually employed in their respective practices. He identifies three ways of doing research in art and design in order to highlight the complexity of the processes of creation of works of art and design: a) research *into* art and design, which consists in historical research and research on theories and movements in the arts; b) research *through* art and design, which consists in research on the materials and the development of a given artwork, from its conceptualization to its creation; c) research *for* art and design, which consists in the reflection on how the final product of the artist’s research and practice, the art work, is able to communicate knowledge in a form that is not verbal or written, but purely visual.

In his article “Pleading for plurality: artistic and other kinds of research” the philosopher Søren Kjørup claims that if Frayling’s suggested the categorization firstly, it was Borgdorff who refined it and made it broadly accepted as the main way to conceive artistic research (Kjørup, 2010, p. 26). Moreover, Kjørup, devotes much attention to the understanding of artistic research as the study of artists’ creative processes. In this sense, he reflects on how, in the context of artistic research, the artist becomes himself the researcher: if so much importance is given to the creative process, namely the *research in the art*, the only person who is really able to understand this research deeply can only be the artist (Kjørup, 2010, p.25). Considering again the above example, it is quite understandable that the artist is the only one who can provide the information on how the work started. To offer a complete view of what the artistic process was like, the artist has to communicate why he or she came out with the idea of the oysters, if it was a decision guided by his or her personal interests on fishery or whether the local community asked for it, which were the limits to his/her creativity, if it was difficult to find experts in the field of oysters in lagoon landscapes, or simply how long did each passage of the process require. If, on the one hand, it is not necessary to be an artist to do research *on art*, as well as on the context the art work belongs to (*through art*), on the other hand, art historians will always need the support of artists to reach a complete overview of their creative processes (*research in the art*), which is exactly what makes artworks especially valuable (Kjørup, 2010, p.26). This is an issue that is especially relevant in contemporary art, where the relationship between critics and artists is usually really intertwined, and where artists often provide written information on their artistic process. It is sufficient to think, for instance, to the relationship between the artist Maurizio Cattelan and the critic Francesco Bonami: it is natural to associate the two personalities, as if their works influenced one another.

Kjørup makes some further considerations on the role of the artist in artistic research, claiming that he or she has to be “both a creative maker and an inquisitive analyst” (Kjørup, 2010, p.26) – two things that do not automatically go together.

Finally, let us consider the view of the philosopher Mark Johnson, who draws on the artist and researcher Stephen Scrivener to distinguish art research in: 1) research *into* a subject of inquiry (e.g., oysters in the lagoon ecosystem); 2) research *through art*, namely art as a method to understand things (the study process on oysters); 3) research *for* art, where art is the subject of inquiry (e.g., research on how the installation about the oysters’ contributes to the creation of new art). According to Scrivener, this last point is the most important for the advancement of art, which pursues “new understanding of the limits and potentialities of art” (Scrivener, 2009). In other words, not only an artwork can teach us something about the world, can reveal something we did not know before, but it can also be innovative enough to change our understanding of art itself (Johnson, 2010, p. 145).

According to Johnson, while thinking about artistic research it is important to consider that good artists engage with their medium in a profound exploration of its possibilities, which lasts their whole carrier, as a never-ending process (Johnson, 2012, p.144). This can be seen both in terms of topics, such as the engagement with popular commodities made by Andy Warhol during his entire career, or in terms of techniques, as Marlene Dumas does with her research of images that she then transposes into paintings.

The relationship between artistic research and academic research

Even if the definition of artistic research is quite well recognized in the fields of aesthetics and in the context of art schools, as seen above, there is still some skepticism concerning artistic research among academics from other fields. Here, the work of research done by

the artists still struggles to be acknowledged as a proper, effectively valid, method of inquiry¹.

The problem with artistic research is that it is difficult to tell what kind of contribution to knowledge artists can give. According to Johnson (2010), there are at least four main reasons for such a view on artistic research, structurally embedded in traditional accounts of research. Firstly, we usually associate the notion of knowledge to the accumulation of scientific knowledge; secondly, we think of artworks as imaginative works that communicate the realm of the immaterial (e.g., emotions); thirdly, the term knowledge calls to question on methods, inquiries, experiments, tests, formulation and confirmation of hypothesis (all elements which are not associated with art); finally, we cannot recognize any counterpart in the arts to research methods in scientific inquiry (Johnson, 2010, p. 142).

I shall now illustrate three different perspectives on the similarities and divergences between artistic research and academic research, and on the opportunities opened by artistic research. The first position, exemplified by Borgdorff (2010), points out the similarities between various types of research in various disciplines, and explains how those are/can be used for artistic research. A second point of view is taken by the theorist Søren Kjørup (2010), who shifts the perspective slightly: according to him, there is not a unique form of artistic research, as all the processes and outcomes of artistic practice are different. He maintains that a feature of artistic research is “plurality”. A third view, put forward by Gerard Vilar (2020), affirms that art research seeks to lay down a new type of language, in order to build new ways of thinking about the world.

It is easily noticeable that the term artistic research refers at the same time to the domains of art and academic inquiry in general, and it is exactly in this expression that Borgdorff

¹ As reported by Borgdorff, many see artistic research as more compatible with speculative philosophy, rather than scientific knowledge. Moreover, some said that artistic research should be done outside an academic context, in order to maintain an independent mode of knowledge production, free of any academisation (Borgdorff, 2012, p. 5).

sees the interconnection between the two worlds: on the one hand art is contributing to enhance knowledge, and on the other hand academia is opening up to new forms of knowledge production and communication. In so doing, artistic research contributes to elevating the world of art-making (Borgdorff, 2010, p. 44).

In the article “The production of knowledge in artistic research” (2010), Borgdorff spends some pages to outline the continuities between artistic research and various other more traditional disciplines. In particular, he is interested in how those have influenced artistic research and which instruments the latter has taken from them. Starting with the humanities, it is evident their strong embeddedness in the art world. Disciplines such as art history, musicology, cultural studies, architectural theory, film theory, etc. (which in general are referred to as humanistic disciplines), very often, if not always, take art as the object of their analysis. Yet, a strong difference between artistic research and humanistic research is to be noticed in their respective methodologies: if one feature of artistic research is the attachment to practice, the learning-by-doing, humanistic research is always, with few exceptions, theoretical. Borgdorff claims that each humanistic discipline has its own specific terminology, research methods and theories, which he sums up under the umbrella term “grand theories of our culture”. Nonetheless, continues Borgdorff, there seems to be a strong bond between the humanities and artistic research in institutional terms: often, the humanities are more likely to welcome art-oriented practices in their departments, as well as to provide funding for artistic researches (Borgdorff, 2010, pp. 48-49).

For what concerns the field of aesthetics, he maintains that, since the very beginning of this discipline, philosophers have investigated how art can convey knowledge. In particular, here Borgdorff draws on three fundamental authors in this tradition, namely Alexander Baumgarten, Immanuel Kant and Theodor W. Adorno. The first author, Baumgarten, claims that humans obtain their knowledge on reality thanks to their senses,

and works of art allow humans to manifest this sensory knowledge. Starting from Baumgarten's intuition, Kant formulates the popular idea that art, as a representation of the imagination (together with other forms of aesthetic objects), is able to induce thoughts, which are difficult to express by the means of language (Kant, 1978, p. 49 in Borgdorff, 2010, p. 49). In Borgdorff's words "characteristics of artistic products, processes and experiences is that - in and through the materiality of the medium - something is presented which transcends materiality" (Borgdorff, 2010, p. 49).

The beauty of an object, according to Kant, does not lay in the object itself, but rather in the relationship between its form and the way our cognitive faculties work. Provided this, art can be judged as beautiful when it is able to instantly produce something in the cognitive level by the means of its form, to stimulate the "free play of our understanding". To produce art that is beautiful, artists work on the form of their works to stimulate our cognitive capacities. (Rohlf, 2010). Finally, Adorno assigns to art the value as the only instrument able to keep alive the perspective for a better world. Adorno was the first one to find a connection between art and social engagement (Adorno, 1966 in Borgdorff, 2010, p. 2010).

As for the methodology of the social sciences, this is useful for the purposes of artistic research because many artists conduct for example ethnographic researches, field researches, collaborative inquiries, et alia. The common trait that unites social sciences and artistic research is their engagement with the investigation on the human way of living, how we relate to the world and between one another (Borgdorff, 2010, p. 51).

Also studies in technology and science can serve artistic practices, starting from research on materials and technologies, which are useful to improve the performativity of art and its media. Borgdorff calls this "applied research" (Borgdorff, 2010, p. 52). For instance, researches in the field of chemistry on new materials which are more sustainable, impacting less on the environment and more easily dischargeable, nowadays play a

fundamental role in artistic practices. In addition, the binding of artistic with technological research is especially important in design and architecture. It does not come as a surprise to find dedicated courses in the training programs of technical universities: sciences and design are trying more and more to combine each other's methodology and practices. Broadly speaking, multidisciplinary cooperation can result in two forms: 1) scientific research is useful to elevate artistic production; 2) art is useful to disclose scientific concepts which normally are hard to grasp (Borgdorff, 2010, p. 53). Let us serve ourselves of an example to facilitate the understanding of how multidisciplinary cooperation can be used the two ways around. During the last few months I had the chance to deeply study the exhibition *Bruce Nauman: Contrapposto Studies* exposed in the Venetian exhibition space Punta della Dogana from 23rd May 2021 until 27th November 2022. The works chosen for this exhibit follow a precise research path on the study of the artist's own body and its movements in the space, mainly conducted through the means of audiovisual tools. Nauman started this research at the very beginning of his carrier, at the end of the 60s, when all he could do was to film himself with a Super 8 camera inside his own studio, from a fixed position, for a limited amount of time. In recent years, the artist decided to re-take the studies of this period and elaborate further on them, as he saw new space for possibilities thanks to the advances in the audiovisual technologies. In this way, the exhibition not only shows the artist in a changing body, inside his new studio, but also witnesses the development of audiovisual instruments that occurred during the last 30 years. The Super 8 camera is left in favor of 3D videos, duplication of images, interactive projection of spaces. It goes without saying that without the technical advances made by experts in the field of audiovisual research, the advancement of Nauman's artistic research would have not been feasible.

An example of how art can cooperate with science is the work of the artistic group *Unfinished Business* and the workshop they proposed to engage the public with microbial

cultivation. The extreme importance of microbes as components of ecosystems is a key topic in contemporary biology. Historically, however, more attention has been devoted to the “antibiotic”, which, according to the geographer Jamie Lorimer, is an approach that seeks to “eradicate, control, rationalize, and simplify life that are common across landscapes, cities, homes and bodies” (Lorimer, 2020, p. 3). This approach has its roots in the turn in sciences and technology (and consequently in politics) occurred between the 19th and 20th century, which started thanks to the advancement in microbiology pursued by Louis Pasteur. His studies had very important practical applications, especially they were fundamental to the depletion of mortal epidemics, the amelioration of health standards and the improving of the food supply chain. As a consequence, on the one hand, the antibiotic turn led to an amelioration of living conditions and life standards, to a diminished mortality rate and, ultimately, to economic growth (Lorimer, 2020, p. 4). Nonetheless, on the other hand, in many cases (especially in recent years) the control over microbial life has been over-exercised and exasperated to the point that microbes adapted to antibiotics, became resistant and contributed to the spread of new pathologies (Lorimer, 2020, pp. 1-4). It is clear, then, that the narrative around microbes needs to be refreshed. The situation gets even more complicated, considered that it is difficult to see microbes without the aid of a microscope and, more generally, it is very hard to understand their functions if not provided with scientific tools and knowledge. The artistic group *Unfinished Business* proposes a workshop in which participants, in couples, are invited to plunge their hands into sourdough leaven. Meanwhile, an audio recording guides them into identifying themselves with one of the numberless microorganisms present in the sourdough². Sourdough, as other types of fermentation, is indeed a way to engage first hand and at home with microbes: you see the fermentation grow and

² Unfinished Business, *Mush*, 2019: <http://www.thisisunfinished.com/work/mush/> (last access: 17/11/2022)

produce sourdough for you. If you don't take care of it, the bacteria will die and consequently the production of sourdough will stop.

Once delineated the similarities and continuities among different disciplines and research in the arts, Søren Kjørup's position appears more straightforward. As mentioned above, the author suggests that in artistic research it is impossible, and purposeless, to point at one sole specific, pure method of doing research (Kjørup, 2010, p. 24). To sustain his thesis, he reflects on the historical dichotomy between natural sciences and social sciences. In the mid 19th century, Kjørup argues, the English philosopher John Stuart Mill affirmed that the *Geisteswissenschaften* (social sciences) should advance in their method, by taking the physical sciences as an example (Mill, 1987, p. 19, from Kjørup, 2010). From here stems the conviction that social sciences and the humanities, too, should follow the methods of the natural sciences to be considered proper research disciplines. At the end of the 19th century we can distinguish two traditions in the humanities: on the one hand, an hermeneutic tradition, along the lines traced by Wilhelm Dilthey, who claimed that the humanities should not follow the methodology of the natural sciences, because their object of inquiry - human beings and their cultural products - is different from that of the sciences (Dilthey, 1991, from Kjørup, 2010, p. 28); on the other hand, a neo-Kantian position, along the lines traced by the philosopher Wilhelm Windelband, who was more concerned about the aims of the different disciplines: those which search for general rules and those that search for particular cases or singular events. Windelband distinguishes between these two aims in research, without categorizing disciplines inside of them. Even though we normally tend to position scientific disciplines as searching for general laws, that does not always happen, as they can also focus their studies on just a single phenomenon (Windelband, 1915, in Kjørup, p. 29).

This historical reconstruction, Kjørup observes, encourages us to believe there is going to be someday a recognition of the specific value of artistic research, not dissimilarly to what

happened with the humanities starting from the late 19th century (Kjørup, 2010, p. 30). The artist and PhD student in artistic research Per Zetterfalk had recently tried to list what are the schools of thought we can find nowadays in the debate on artistic research and its relationship with academia (Zetterfalk, 2020). According to him, there are various positions that clash with each other: for instance, there are some scholars that are convinced that artistic research is equipollent to academic research and thus must follow the academic tradition of transparency, analysis and argumentation; some others think that an essential element for a good artistic research is the report that describes the development and results of the research; others, on the contrary, believe that a text reporting the results of the research is not necessary in the case of artistic research. Moreover, Zetterfalk reflects further on the dichotomy between art and science and on their respective methods: he is convinced that it is wrong to attribute certain fixed methods to one discipline or the other. In fact, in both art and science we can distinguish different branches and disciplines that come together dynamically and affect each other. By taking from different sources, both art and science develop different ways of solving problems and thus provide many different, heterogeneous results (Zetterfalk, 2020).

With the following question Søren Kjørup effectively sums up the kernel of the debate:

If we want to claim that artistic research should be left alone to develop its own methods, should the reason be that the *object* of artistic research is something special, or should it be that the *kind of knowledge* artistic researchers want to produce, is different from the knowledge produced in traditional disciplines and not least in the natural sciences? (Kjørup, 2010, p.29).

He provides a partial answer to this question, by stating that there exist in academia many kind of research with different objects and goals, and that this is also true among different kind of artistic research. I also find interesting Zetterfalk's remark that both artistic and academic free research, namely research that does not have boundaries, allows itself to

explore its objects with different approaches and is able to transcend from established tradition. (Zetterfalk, 2020).

To conclude this overview on the relationship between artistic and academic research, I would like to look at the position defended by the Spanish philosopher Gerard Vilar. In his article “Does Artistic Research Produce Knowledge? A Five-Fold Distinction” (2018) he claims that the term artistic research is in itself a “buzzword [...] to bring contemporary art practices to new forms, which are more academically respectable and closer to the empirical and social sciences and humanities” (Vilar, 2018, p.1). Given that art can be evaluated from different points of view, the term ‘artistic research’ can be used to highlight the cognitive value of art, in other words, to consider artworks as a tool for thinking. In the article, the author seeks to sort out five different meanings of the concept of artistic research. The first one I find in line with the first category of artistic research singled out by Borgdorff, the “research *on* art”, which Vilar calls “research *for* art”. With this term, Vilar refers to the research which is necessary to the production and realization of the artwork or, in other words, the process of turning imagination into practice. According to Vilar, this form of artistic research is analogous to other types of research: once chosen the object of inquiry, the scholar has to find what instruments are useful for the pursue of the research. Vilar says that artistic research is thus “another form of cognitive production” (Vilar, 2018, p. 4). The second perspective from which to understand art as research practice, according to Vilar, sees the artist as a social researcher. More and more often, artists conduct investigations on social, historical or anthropological issues (e.g. projects on traumatic memory, gender discriminations, oppressed minorities, etc.), which are common inquiries in social sciences and humanities. The research is on the same subjects investigated by history or sociology, while the difference lays in the way the results are shown: instead of presenting an article on a scientific magazine, like a historian or a sociologist, an artist produces an artwork or

an exhibition. Moreover, things get more complicated if we consider that sometimes social science's scholars decide themselves to communicate their work through the means offered by exhibitions. It remains open the question whether the scholar, in this case, could be considered an artist or not. This takes us to the third meaning of 'artistic research' identified by Vilar, which gives relevance to the figure of the curator as the person conducting the research. Indeed, curators usually engage in transdisciplinary studies to create an exhibition that not only is aesthetically pleasant and a place for aesthetic reflection, but also is a contribution to more scientifically-related studies (Vilar, 2020, p. 5). The forth point of view from which we can see artistic research is what Vilar calls "Disturbances of Reason". With this term he refers to the practice of art since 1900. Some of the new avant-gardes presented works of art that are able to encourage questioning, troubling common sense and traditional certainties and beliefs, and break them out, in order to pursue for new ones.

Finally, the last way of regarding at artistic research, according to Vilar, consists in seeing it as an instrument to think in a different way. In this sense, art does not have the pretense of giving universal truths, but rather seeks to provide its own view on scientifically relevant issues, give suggestions on how to think about things anew, create alternatives for already existing languages. Recalling the concept of *Welterschliessung* coined by the philosopher Martin Heidegger, Vilar refers to this approach as an "exploration of the *Great Outside*" (Vilar, 2018, p. 6) and underlines that this is a prescriptive concept, while the other four are descriptive. For descriptive concept we intend all the roles that the artistic research can take. Whereas a prescriptive concept, in this case, refers to an attitude that the artists are willing to take, but results are not always guaranteed. Moreover, according to Vilar, this is a skill impossible to teach in school, in particular in universities and academics, and for this reason it should be preserved as an essential difference between art and sciences (Vilar, 2020, p. 6). It is important to remark that Vilar at this point does

not use the verb “knowing”, but the verb “thinking”. There is a substantial difference between the two, and to Vilar art provides a way to think about the world, as it almost never seeks to explain it, nor understand it. In fact, Vilar argues, given that the domain of what we know is way smaller than the domain of what we think, and given the fact that to communicate what we think is much more difficult than to communicate what we know, art tries to reorganize the language, or use it differently, in order to create new ways of thinking about the world (Vilar, 2020, p. 7). In this sense, artworks are the means by which we manage to open the paths to knowledge. In other words, even if an artwork itself does not provide knowledge, it can contain it, and a critical process can disclose it (Vilar, 2020, p.9).

Provided that the position of Vilar is, as himself claims, “eminently philosophical” (Vilar, 2020, p. 6), to illustrate with examples his multifaceted conception of artistic research, is not an easy task. Thus, it is perhaps more effective to describe his view through a metaphorical image. We could think of artistic research as of a telescope. The human eye can easily catch the stars in the Milky Way, however, because of our latitude, of the light pollution, of the weather, and so on, we are able to observe just some of them. Thanks to the telescope, however, the possibilities to observe new stars, planets or other celestial bodies increase exponentially. Obviously, the objects we observe have always been there, and the telescope just allows us to take a different perspective, from which we can see them. More specifically, the telescope reveals more things than a naked eye can see. Importantly, to many people the telescope is just a tool to observe things from a closer point of view, but for experts it is an instrument that opens up to countless possibilities to see new astral bodies never observed before and thus improve their knowledge. The supposed inventor of the telescope, the Italian scientist Galileo Galilei, while using it identified some black spots on the the surface of the Sun. He observed them for many days and studied their variations. Later, he was able to argue that those black spots are

actually the visible result of explosions that happen on the surface of the sun with a varied intensity in a cycle of more or less 7 years, and affect slightly the solar radiation that reaches the Earth's atmosphere. Unlike Galileo, a non-scientifically minded observer would have probably just noticed those spots without bothering too much about understanding their origin and implications. Similarly to the telescope, for some people art research is simply a tool to see things from a different point of view and let themselves be mesmerized by the charm of seeing something new; while for others it is the tool they can exploit to develop further their studies, and that perhaps can bring them to new discoveries.

Scientific research, or what artistic research *is not*

As pointed out so far, there are many possible ways to deal with artistic research, thus it becomes now necessary to narrow the field of enquiry. In this context, I will take on exam the last of the three definitions provided by Frayling (“research *for* art and design”), namely how art is able to convey knowledge (Frayling, 1993, p. 5) and the second of Borgdorff’s (“research *in* art”), namely the research that is required in the art production process (Borgdorff, 2012, p. 23). In particular, I will investigate further on the hypothesis formulated by Kjølrup, about whether artistic research produces a different kind of knowledge (Kjølrup, 2010, p. 29) and I will rely on Vilar, when he claims that art can be an instrument useful to think the world differently (Vilar, 2020, p. 9).

However, before going deeper on how art is able to convey knowledge, it is at this point important to make a step back and consider firstly how is scientific knowledge produced, considered its central role in academic research. As I will try to argue in the developing of my thesis, knowledge production in the scientific field is very different from that in the artistic field. In other words, before going deeper in what artistic knowledge *is*, in this paragraph it is my intention to learn more about what artistic knowledge *is not*.

Academic research is normally associated with scientific research. Nonetheless, “natural sciences” is an umbrella term that encompasses different disciplines, and it is not easy to point out at what are the specific characteristics that explain why those disciplines ought to be considered scientific ones (Okasha, 2006, p. 3). The complexity of the sciences is normally not investigated by scientists themselves, who are usually focused on the results of scientific research, rather than on its methodological status. The distinctive features of scientific research are rather the main object of study for the philosophy of science (Okasha, 2006, p. 4). In this section, I rely on the volume *Philosophy of Science: A Very Short Introduction*³ by Samir Okasha (2006) to give an overview of the key features of scientific research.

Generally speaking, philosophy of science aims to analyze the inquiry methods used in the various sciences. It is useful to look at them from a philosophical perspective, because this allows for going deeper into processes which usually scientists don't explicitly put into question (Okasha, 2006, p.14). A good starting point to do philosophy of science is to take a look at the history of science (Okasha, 2006, p.4).

Modern science originated between 1500 and 1750, while Europe was experiencing a period of rapid development in knowledge, commonly referred to as the “Scientific Revolution”. Obviously, science already existed before this period, but scientific inquiries were conducted within a different paradigm, also known as the Aristotelian view of the world. The Greek philosopher Aristoteles (IV century BC) developed very detailed theories in physics, biology, astronomy, cosmology. Even if his beliefs are nowadays quite obsolete (e.g. he thought that bodies were made of four elements - water, earth, wind and fire), they have been dominant for almost two millennia (Okasha, 2006, p.5) and he is recognized as the initiator of the scientific study of life. Indeed, he was the first one able to organize the study of nature from the means of observation and experience, to a

³ The pages I report here refer to the Italian translation published in 2006 by Piccola Biblioteca Einaudi

system of general propositions and concepts. These general propositions and concepts are supposed to be at the basis of all other truths within the subject of inquiry. In other words, according to Aristotle, the causal explanation can potentially explain every rule of nature (Lennox, 2021).

Starting with the astronomical studies conducted by Copernicus, at the beginning of the 1500, occurred a slow shift toward a different vision of the universe than the Aristotelian one and, with that, a different approach to scientific inquiry. Indirectly, Copernicus' publications promoted the development of modern physics thanks to further studies conducted by other scientists, such as Galileo Galilei. Galileo is in general considered the first real modern physicist. Indeed, he was the first to use mathematics as a language to explain the behaviors of objects of the material world (nowadays it is normal for us to serve ourselves of mathematics' language while demonstrating theories of physics, biology, economics, etc., but before Galileo it was not taken for granted at all). Moreover, and foremost, he was the first to introduce the experimental demonstration as the final step of the formulation of an hypothesis (Okasha, 2006, p.7). The experimental demonstration was an instrument completely lacking in the Aristotelian method, but it was very quickly recognized as a prerogative of scientific inquiry, and indeed still used nowadays.

The scientific revolution culminated with *Philosophiæ Naturalis Principia Mathematica* (Mathematical Principles of Natural Philosophy), a work by Isaac Newton, published in 1687. In this publication he adjusted the Copernican and Galilean theories on movement, and managed to impose a model, which remained the dominant one for the next 200 years (Okasha, 2006, p.9). In this period, faith in science grew enormously and, between the XVIII and XIX centuries, science lived a time of intense development. Indeed, thanks to the application of the Newtonian method, disciplines such as chemistry, optic, energy, thermodynamics, electromagnetism, finally made their course. A time of significant

change and yet unsolved disagreement in modern science began in the first part of the 20th century, when the physicists Albert Einstein and Max Planck formulated, respectively, the theory of relativity and the theory of quantum mechanics. Both theories put in question the functioning of the Newtonian method, or, in other words, lead the Newtonian paradigm to a crises. Both theories are still debated and the tension has not yet been solved (Okasha, 2006, p.10).

Even if extremely brief and non-exhaustive, this introduction to the history of science has the purpose to show how fast and revolutionarily scientific ideas can change, often bringing to the replacement of an old view with a completely new one (Okasha, 2002, p.83). The American physicist, historian and philosopher Thomas Kuhn dedicated much of his career to this topic of research, which he illustrates in his 1963 publication *The structure of Scientific Revolutions*, a very influential book for the philosophy of science. As the title suggests, he was particularly interested in scientific revolutions, and tried to understand their functioning. To do that, he introduced the term “paradigm” to refer to the set of theories that the scientific community accepts at a certain time and the range of examples that explains these theories. A new paradigm marks a new beginning for a scientific discipline, as it summarizes an entire scientific perspective. (Okasha, 2002, p. 83). Whenever a scientist discovers anomalies while formulating and seeking to demonstrate a new theory, realizing that the theory does not fit with the current paradigm, the scientific discipline s/he is practicing goes through a crisis. Kuhn calls this range of time “period of revolutionary science”: during this time many alternatives to the current paradigm are suggested, until a convincing one starts gradually to be accepted. Usually, it takes more or less a generation to change paradigm (Okasha, 2002, p. 84).

To sum up, we evince from what written above that there are at least two distinctive traits that define the course of science nowadays: on the one hand the experimental method,

firstly introduced by Galileo Galilei and still used now; on the other hand the succession of paradigms, which can be substituted from a period of crisis to the other.

Let us now take a step back to the field of artistic research. If we considered, as mentioned above, artistic research as a way to convey knowledge, then we will realize that the two characterizing elements of scientific research just mentioned, do not fit with this kind of knowledge.

For what concerns the experiment, for instance, it is true that artists experimented a lot with subjects, materials, forms of expressions, and so forth, as also stated in the definitions of Borgdorff (“research *on* the arts”) but it is a research that has never the purpose to demonstrate a theory to the artistic community. As for the use of a paradigmatic system to describe the course of art history, it would be a very hard task, considered the abundance of styles and technics over art history, and its non-linearity.

Addressing cognitivism: can art convey knowledge?

In the previous sections we analyzed from various points of view what artistic research can be and consist of. Then we put in relation the artistic research in respect to academic research on a more broader sense, and finally we discussed on what is *not* artistic research. In this latter section, in particular, I tried to sort out some specific features of scientific research, which are fundamental for the pursuit of knowledge (the experiment and a paradigm to adhere to).

At this point, I find it important to try to understand whether art as well is able to pursue some knowledge and if that is the case, what can we learn from that.

It is intuitively clear that when we find ourselves in front of a work of art, we can possibly live an emotional experience. In some cases, this experience involves us in a way that triggers some emotions in us, that connects us with something related to our life, or at least reminds us some images that are familiar to us. Let me make an example. Some

years ago a friend of mine was in Paris visiting the Musée de l'Orangerie when he saw a painting by Matisse, portraying a young woman sitting on a chair, with her arm leaned under her cheek, wearing a white skirt and a striped shirt, looking at the artist (or the spectator) while carrying a violin. I got a message from him with a picture of the canvas and written "This Matisse reminds me of you". Indeed, I wear very often striped shirts and a white skirt in summer. Back in those days, I had just started university and in the meantime I was studying the violin. I remember lamenting with him the exercises I had to do, together with the books to read for the upcoming exams. To me indeed, the association was actually quite straightforward. Nonetheless, the person who was visiting the museum next to my friend, obviously did not link the *Femme au violon* (fig. 1) with me, as s/he ignored my new-life struggles and even my existence. Thus, in this case, what my friend caught while looking at the portrait, was not the same of the other visitor: they lived a different kind of experience in front of the artwork. However, if we want to take in exam the cognitive value of artworks, to understand whether we can learn something while looking at an artwork, it is then crucial to examine if there can be a type of knowledge that we can share with other people. Let us consider again the *Femme au violon*: while looking at this painting, both my friend and the visitor next to him could have learnt that the painter Henri Matisse, between 1921 and 1922, enjoyed to paint indoor scenes.

With this example, hopefully, it becomes clearer what I intend when I say that art is able to open up our mind towards new paths of reflection on things that we know. I will try in this section to sustain this intuition, while relying on some philosophical literature that deals with the relationship between artworks and cognitivism.

The question of whether art is able to reveal something about the world, something that is difficult to grab with other disciplines, has concerned philosophers since a very ancient time (Gibson, 2008, p. 574). Even though Vid Simoniti affirms that the question whether

art can be considered a source of knowledge *at all* (which concerned the field of aesthetics between the 90s and early 2000s) has nowadays been overcome, the debate is still on whether it is a knowledge that is as valuable as the knowledge provided by other non-artistic disciplines (Simoniti, 2021, p. 561). Before going deeper into this question, it is useful to introduce the issue of cognitivism in the arts.

The philosopher John Gibson gives an introduction to the study of the relationship between art and cognitivism, in his article “Cognitivism and the arts”, published in 2008.

Firstly, he opens the article with a definition of what human knowledge consists of: according to him, human knowledge is a stratification of “effective practices” for the investigation of the world. When somebody engages in knowledge production, the achievement of something useful for the investigation of the world is not always guaranteed. Perhaps, the only fact of being engaged in a research is seen as a cognitive *pursuit* (Gibson, 2008, p. 573).

To question about a possible cognitive role of the art means to ask whether art could possibly have a role in this *pursuit* of the investigation of the world. Indeed, while talking about artworks, it is common to refer to their educative and edifying values (Gibson, 2008, p. 574), and, as seen in the example above, artworks can have the special ability to accompany us towards the exploration of some unexplored existential areas of the world, which are difficult to dive in with other kind of tools (Gibson, 2008, p. 574). Thus, in this context, cognitivism tries to answer two fundamental questions: on the one hand, it tries to demonstrate that art is able to convey some knowledge, on the other hand, it is useful to demonstrate that what we learnt comes from the artwork itself (Gibson, 2008, p. 575). In other words, while looking at an artwork we perhaps understand something that we have never thought about before. Gibson calls this special feature the “cognitive content” of artworks: the challenge of cognitivism is to show that artworks have something in them “that is of cognitive significance” (Gibson, 2008, p. 576).

There are of course some big arguments against a cognitivist view of the arts, and Gibson identifies four main ones. The first argument is what he calls “*the problem of unclaimed truths*”: many descriptions we find in art are world-adequate, meaning that their content seeks to correspond to reality. We can therefore say that art has some connections to truth (Gibson, 2008, p. 577). An easy example can be a painting by Tintoretto: while representing a scene set in Venice, I can appreciate it more, if I recognize the places that he paints. Those are existing things that I already know. This kind of information is, so to speak, just useful for the context, for art’s sake, and does not have a particular cognitive function. It does not bring me to learn something new. In other words, art uses reality as a setting, and thus we could conclude that art, in those cases, does not give new knowledge of reality, but rather “*presupposes*” it (Gibson, 2008, p. 577).

The second argument is called “*the missing tools of inquiry*”: there is a problem related to the tools used by artists to create knowledge. Traditional knowledge-producing tools rely on specific methods of inquiry, whereas artists just give us a product, without telling us how they were able to achieve the results.

For what concerns the third argument, named “*the problem of fiction*”, Gibson considers that we are used to talk about art as something belonging to a different world, a reality which sits in a space that is not the world we experience every day (Gibson, 2008, p. 574). Art is thus considered as an *aesthetic* pursuit, and it is difficult to reconcile this idea with its *cognitive* pursuit, if we consider art as fundamentally detached from reality, something owing somewhere else. In this sense, we face a fundamental problem we encounter in cognitivism: the aesthetic value clashes with the cognitive value of artworks (Gibson, 2008, p 574). Moreover, most of the art tends to show things that are imagined by the artist, a fictional world which is not the actual world. Seen in this way, the question would be whether it is possible to learn reality through the arts (Gibson, 2008, p. 578). This question connects with the last argument, which deals with “*the nature of artistic*

creativity". In artworks, there is always a tension between a trustful representation of reality, and the willingness to add something new, that we don't know already. This latter element is provided by one peculiar feature of art: the creativity of artists. While talking about creativity, it seems important to enhance the freedom the artist has in respect to reality, and his/her capacity to escape the empirical world in order to achieve a kind of liberation, thanks to the artistic process. Nonetheless, when an artist is copying reality (doing a mimetic reproduction), it is difficult to praise their creativity, as they are actually adding anything new to our experience. That said, it is better to see art not as something that reproduces reality, but something that has found a way out from it. This is one of the greatest human achievements, to be able to turn our backs on the real world and create something to escape from it, something which is, in addition, more interesting. In this way, we should emphasize the distance between art and reality (Gibson, 2008, p. 579).

Having illustrated these four criticism, Gibson follows with a proposal of three approaches to the study of art in cognitivism, which try to overcome what just mentioned above: arts that give *philosophical knowledge*; arts that give *experiential knowledge*; *neo-cognitivism*.

In western philosophy we refer to philosophical knowledge as an attempt to answer some struggling questions, such as "What does really exist?", "What is beauty?", "What is knowledge?", etc. This first approach recognizes that the arts, as well as philosophy, are committed to speak of the human situation (namely how humans hang together morally, socially, and psychologically). However, it is necessary to consider some premises. Philosophers usually distinguish three main kinds of knowledge: "acquaintance knowledge", namely the knowledge we get by being acquainted to somebody (I know my brother, my cat, my friend Camilla, etc.); "knowledge-that", namely the knowledge that we acquire when we get to learn something (for instance I learn that the capital of Australia is Canberra); "knowledge-how", namely when I learn how to do something (how to play the violin, how to make a good curry, how to paint with water colors) (Pavese, 2022). This last

kind of knowledge, the knowledge-how, is the one that is usually linked to artistic knowledge. The knowledge-how, however, does not presuppose a precise way to be transmitted. In other words, people who exercise knowledge-how are not always able to explain to another person how to replicate what they are able to do. It is difficult for them to provide a description, in order to transmit what they know. Artists, indeed, don't usually *explicitly* speak about the human situation. If ever an artwork gave such a knowledge, it does that always implicitly, and it is the role of the aesthetician to bring to light what is left in the shadow of artworks (Gibson, 2022, p. 580). To do that, in contemporary aesthetics are usually taken two methods: on one hand what Gibson calls the "critical cognitivist approach", which trusts on the critical discourses made around artworks (from art critics, art theorists, professors, etc.) (Gibson, 2008, p.581); on the other hand the "thought experiment approach". This latter serves itself of a fictive image, an imagined scenario and the conventions of story-telling to guide the reasoning towards a conclusion, or truths (Gibson, 2008, p. 580). The question they pose is always "what would happen if x were the case?" (Gibson, 2008, p. 581). This is the same approach used in the arts as well: artworks invite us to reflect on something, and to make our conclusions out of a representation (or an image).

If we consider the philosophical knowledge approach in respect of the four arguments reported above, it gives a response to all of them. To the first one (art often seeks to correspond to reality), since it gives a reason why artists are not claiming explicitly when they are talking about reality, and consequently to the second one (*missing tools of enquiry*), as we have just seen that knowledge-how is hard to be transmitted. Then, considered the "critical cognitivist approach" and the "thought experiment approach", we can conclude that both methods address fiction (argument three) and creativity (argument four) as the two elements to investigate, if we want to reflect on existential questions, starting from an artwork (Gibson, 2008, p. 582).

The second approach, proposed by Gibson to study art in cognitivism, analyses how the arts can provide experiential knowledge. This one starts from the intuition that consuming art, for some people and in some cases, means to have a “valuable experience”. As already discussed above, we could say that art is able to give us something which the real world cannot give us, or we are not able to experience. Art gives the means to experience many *kinds* of human experience. This is a sort of knowledge that is acquired, not as an answer to a philosophical question, but more as an enriching of our awareness on the different ways of living the world (Gibson, 2008, p. 582). There are two ways to approach the experiential knowledge in contemporary aesthetics: 1) *subjective knowledge approach*: art tries to give a glance on life from the inside of our introspective world (tendency which is the opposite of what science does, as it seeks to give an objective view of the world); 2) *simulation approach*: arts provide fictive characters that live fictive but possible situations, from which we could learn something (Gibson, 2008, p. 584). This approach basically uses simulation as a tool of inquiry, and thus it responds easily to the *missing tools of inquiry* and the *unclaimed truths* arguments. In addition, considered that simulations are exactly fruit of the creativity process of artists and are obviously fictive, also the second two skeptical challenges (the problem of fiction and the nature of artistic creativity) are overcome (Gibson, 2008, p. 585).

The final approach proposed by Gibson is neo-cognitivism. Differently from the other two approaches, which investigated the cognitive value of art as a matter of truth and knowledge production, neo-cognitivists address other things: on the one hand, they see art as cognitively valuable because of its capacity to transform the knowledge we already possess. Rather than trying to make new knowledge about the world, art takes our focus on what could remain hidden when dealing with some topics (Gibson, 2008, p. 585). For example, the Venetian designer Matteo Silverio realized the work *SkyTide* (fig.2) after the 2019 Aqua Granda in Venice. It consists of the representation of the altimetry that the

water reached during the night of the 12/11/2019. His intent was to show how Venetian people living in different parts of Venice experienced differently the adverse event. Therefore, this work conveys something about the experience of the extraordinary Venetian high tide, which probably we would have never thought about, unless we had lived the event (Gibson, 2008, p. 585). While using objective data, Silverio uses his creativity to enlarge our point of view on a specific situation.

On the other hand, neo-cognitivists see art as a laboratory in which things have the possibility to be put in practice: in other words, art tries to imagine how things could turn out if a certain event occurs (Gibson, 2008, p. 586). For instance, the representation of the Final Judgement in the Sistine Chapel in Rome is an attempt by Michelangelo to represent what it is going to happen once the Apocalypse occurs, relying on the Sacred Texts, but putting his strong creative contribution. These two examples easily respond to the fourth argument (on the *nature of artistic creativity*), as well as to the third argument (on the *problem of fiction*), since both artworks show something responding to reality (scale representation of high tide altimetries on the one hand, human bodies on the other hand), which is recognizable, but the viewer, perhaps, will never experience.

While following a neo-cognitivist method, Vid Simoniti explores the intuition that art could provide a contribution to the political discourse. We are nowadays used to see art assuming the role of political arena, considered that contemporary art has been socially engaged since a long time already, to the point that we now refer to specific forms of art such as “artivism” or “socially engaged art” (Simoniti, 2021, p. 559). According to Simoniti, politically engaged art can be considered as a narrative used to practice democracy: provided that democracy presupposes that the political debate has to be publicly made and opened to everybody, the means used to do that are multiple, and every participant is free to choose the one which suits him/her the most (Simoniti, 2021,

p.560). But do works of art contribute to political conversation or do they simply give a reflection on them? Does art give just a glance on what is happening or does it get any deeper (similarly to a view of a theorist or a journalist or academic)? (Simoniti, 2022). In fact, Simoniti recognizes that on the one hand there are many examples of artistic products which do not jump to any moral or ethical position, as they limit themselves to just show things as they are. Their only main purpose is contemplation, without necessary forcing us down to conclusions (Simoniti, 2022).

On the other hand, however, there are also artworks which are specifically intended to trigger our reasoning upon some important topics. In his recent article “What does art do?”, Simoniti sustains that artworks offer the possibility to go outside the usual rules of discourse on specific issues, by opening space to think outside the alternative between the right and the wrong (Simoniti, 2022). In other words, he is saying that an artwork is able to provide a different way to reason upon things which are relevant in democracy, by broadening our field of analysis.

At this point, Simoniti provides two responses to this argument, which I report here enriched with some examples that I took from artistic products which I have been personally exposed to.

- 1) Artworks serve to get the audience (or society) used to some topics. The exhibition *Open-End* exposed in Palazzo Grassi (Venice) from 27th of March 2022 to the 8th of January 2023 presents over 100 paintings by the Dutch painter Marlene Dumas. The very first rooms of the exhibition are characterized by paintings which basically reproduce pornographic images. Even if porn fruition in western society is quite taken for granted, the choice of having so much images in an institutional exhibition space still strikes the audience. Even more so, if the author of the images is a woman. Marlene Dumas, with this series of pornographic paintings, tries to normalize the existence of porn culture in our society, its elevation to an artistic investigation of the

body and its integration also into spaces which go outside the normal places it is showed.

2) Artworks allow for a temporary suspension of judgement and leave time for contemplation of the political clashes. “The space for aesthetics is therefore neither fully political nor anti-political” (Simoniti, 2022). To illustrate this point we can examine the painting *L’absinthe* (1875-76) by Henri Degas (fig.3). The painting is an oil on canvas which shows a woman sitting at a table in a pub, in front of a glass of absinthe. The woman is depicted while staring at an undefined point in front of her, with absent gaze, her arms tiredly falling down her body. Apparently, Degas is reproducing here a possible situation of a French pub of the second half of the 19th century, or perhaps, a scene that he saw first-hand and decided to immortalize by the means of painting. While looking at this work, we can make two observations: on the one hand, we can judge the woman represented as an alcoholic, who decided to escape her condition through the use of a narcotic substance, the absinthe; on the other hand, we can denounce the state and social system of that time, which allowed people to live in very poor conditions, with inhuman working hours, for very low wages, in the name of progress. While showing this scene, Degas does not expect us to take a position on either one side or the other side: simply, he is just showing us a circumstance that prompts our reflections.

Chapter 2. Case Study.

Case study: *Have we met?* The Dutch Pavilion presented for 2022 Triennale Milano

After having looked at some theoretical frameworks for artistic research, having compared it with other academic disciplines, having considered how it differs from scientific research and in which way it could somehow convey knowledge, I will now present and analyze a case study of an artistic research practice. Before analyzing the case study, though, it is necessary to clarify the collocation of the artwork, since it is just one work out of many exposed in an international exposition. Afterwards, it is my intent to focus on it and make an analyses, provided the theory presented in the first chapter.

The case study I want to analyze is the *DataFusion Instrument* (fig.4), exposed inside the Dutch pavilion *Have we met? Human and non-human on a common ground* presented at the 23rd International Exposition of Triennale Milano. The International Exposition, this year, had been displayed from 15th of July to 11th of December 2022, and was titled *Unknown Unknowns*. I chose this specific case, because I had the chance to participate in the making of the exhibition for the pavilion as an intern at Het Nieuwe Instituut, the Dutch institution in charge of its realization. The final outcome displays different contributions from artists and designers from different disciplines and cultures, in order to dive as deep as possible on the Triennale topic, *Unknown Unknowns*, and render it back in a broad perspective. Among the different works presented within the pavilion, I chose to analyze one in particular, namely the *DataFusion Instrument*, produced by the students of the ArtScience interfaculty degree of the University of the Arts, The Hague, in collaboration with Rodrigo Delso and Eric Kluitenberg. There is a double reason why I picked this case: on the one hand, I had several chances to talk with the people involved in this specific project and, on the other hand, the project brings together my interests in ecological studies and arts.

Before looking deeper to the process of development of the *DataFusion Instrument*, I think it is necessary to contextualize it within the exhibition it was part of.

Triennale Milano⁴

Triennale Milano is an Italian institution based in Milan, officially born in 1933. The first International Exposition of Decorative Arts (Esposizione Internazionale delle Arti Decorative) was organized in 1923 in Monza, at the park of Villa Reale. The main purpose of the exhibition was to stimulate the relationships between industry, art and society. Indeed, after the First World War, Italy was investing a lot in industrial development, as this was seen as a way for emancipation and a renewed welfare. Moreover, Italy was very attentive towards creative design, as a key feature of its production system. Since the very beginning, the Exposition was willing to encompass all forms of art (design, architecture, visual arts, performative arts, etc.) as a unified whole, and emphasize their embeddedness within the social and economical context.

In 1933 the International Exposition moves from Monza to Milano. The project for the building hosting it was done by the architect Giovanni Muzio⁵. With an explicit rationalist style (very linear and with pondered volumes), the building is designed to host big cultural events and exhibition. In a few years, Triennale Milano became not only a strategic asset for the economical and cultural life of the city of Milan, but also a crucial meeting point at the International level. In this period, the Triennale became the place where Italian design and applied arts were consecrated and diffused worldwide (Brigi, 2008, p.9).

⁴ All the information on the Triennale reported here can be found on its official website: <https://triennale.org/magazine> (last access: 17/02/2023)

⁵ Giovanni Muzio was an Italian architect from Milan. He was born there in 1893. When he was called to the arms, he was sent in the Veneto region, where he studied the Palladian villas and their classical language. Classical forms are indeed a feature of Muzio's architecture, as he tried to distance himself from academic mannerism and the ostentation of the liberty style. This new, neater style makes Muzio an example in the Italian architecture scene (Puglisi, 2021)

Every three years Triennale Milano organizes an International Exposition, in which designers, architects, and artists from all over the world are invited to reflect and give their contribution on a given topic.

Evidences of the Triennale's interest in looking at the present and targeting its challenges are to be seen in the topics chosen for the various international expositions throughout the years. After the Second World War, for instance, the main concern of the institution (and of society in general) was around reconstruction: during this exposition, the issue was discussed in many panels and conferences, together with the presentation of urban projects, some of which were then realized. During the 50s, Italian industry experienced an economic boom, thanks to lower costs of raw materials and the high workforce disposal. Other important factors for the expansion of Italian industry were the new labour methods and industrial production systems brought to Italy directly from the US and other more advanced European states. Moreover, the cost of energy in the production chain changed thanks to the introduction of gas and gasoline, and new scientific researches on the materials applied to the industry (one above all, the introduction of plastics) (Crocchi, 2008, p. 16). The boom of industrial design, brought to special shows dedicated to this sector of artistic production. The Italian design went through an immense development and became a pioneering industry, appreciated both in Italy and abroad. The success of Italian industry brought to a positive feedback, in which the exportation of the products consistently contributed to the development of Italian economy. In this period, the role of the designer became crucial for the renovation of the production process (Crocchi, 2008, p. 16). In the 60s, the Triennale dealt with the relationships between economic development and social transformations (shows were dedicated, for example, to "House and school", "Free time", "Cities of the world and the future of the metropolis", "Identity and Differences", etc.).

Throughout the years, Triennale Milano expanded its fields of interest to fashion, cinema, graphic design, audiovisual communication, and became a center for innovation and creative research, aiming at spreading cultural production to a broad and diverse public. Thus, gradually, Triennale Milano became a prestigious international institution, a point of reference not only for expositions, but also for didactical activities, seminars, workshops, conferences, special events. Today, the declared mission of Triennale Milano is to expand and innovate on traditional methods of thinking, and to talk about the complexity of the present, by means of a plurality of languages, belonging to the visual arts, design, architecture, and the performative arts.

The topic of the 23rd International Exposition manifests the Triennale's usual commitment to tackle hot contemporary issues. The title *Unknown Unknowns*, indeed, alludes to the mysteries that the human species still struggles to understand. We now live at a time, when the strong faith in mankind's ability to manage the natural world and to explain it in detail is living a crisis. This is being well exemplified by the pandemic during the last years.

The point of departure for the 2022 exposition emerged during the 22nd edition, titled *Broken Nature: Design Takes on Human Survival* (from 1st of March to 1st of September 2019). During the latter exhibition, the focus was on the study of connections between human beings and their natural environments. Here, architecture and design had been addressed as disciplines which can contribute to the development of infrastructures, and can overcome some important challenges of our times. The relationships intercrossing the complex system in which we live, were a key topic in the 2019 edition, and in particular the pressure that humankind is putting on the earth system, which is eventually bringing towards the sixth mass extinction⁶. The Triennale in this edition challenged designers to

⁶ According to geologists, the Earth already survived five mass extinctions, since life began on Earth. For mass extinction we intend a strong decrease in Earth biodiversity, in which only very few species, mostly microorganisms are able to survive. Many scholars agree that we are entering the sixth mass extinction, and its cause is the stress imposed on Earth due to human activities.

develop ways to prevent that, and to eventually fix the damage, wherever it has already occurred. The reparations were not much meant for the human species itself, but rather for those species that will come after our extinction. The declared goal was, thus, to leave traces of a “dignified and caring, if not intelligent” (*Broken Nature* website) species, when our extinction occurs.

The topic for *Unknown Unknowns* was selected during the course of two symposia, by a committee of experts from the world of culture and science. It is not a case that also experts from the ‘hard sciences’ were involved, since one of the aims of the exposition was to open up a field for discussion and interaction between various “disciplines, experiences, cultures and perspectives”. The curator herself, Ersilia Vaudo, is an astrophysicist and Chief Diversity Officer at the European Spatial Agency. Back in 2019, inside the 22nd Triennale, Vaudo was invited by Stefano Boeri (president of the Triennale) at a talk titled “First times”. During this panel, it was discussed that what we know about the universe is nothing more than a 5% of the whole (Scarano, 2022). The same goes with our knowledge on the deep ocean and of our neurotic connections (Mainenti, 2022). In this occasion, Vaudo proposed Boeri to do an exposition dedicated to the unknown, and he in the end decided to directly give her the role of curator. This was the very first time for Ersilia Vaudo to curate an exhibition, since her formation comes from completely different fields. As declared in the interview with Alessandro Scarano published in July 2022 in the magazine *Domus* (Scarano, 2022), for Vaudo diversity has been a key element in the exhibition, which she tried to see not as a limit, but rather as a possibility: scientists and engineers are working together with artists and musicians, which, according to Vaudo, is a fundamental condition when we want to imagine new things, otherwise we risk to fall in the stereotypes of the unknown. In other words, if scientists work to discover new aspects of the unknown, it is not their competence to communicate it to the wider

public. For artists instead, the efficacy of communication is a crucial aspect of their work. To combine the two expertise can enhance both works (Vv. Aa., 2022).

The exhibition is built upon different points of view, but those are taken together with the shared tensions between those who are seeking to discover new things, and those who are doing research and wonder about the things they are looking at (Mainenti, 2022). She is convinced that “something new will happen, if you put together multiple points of view” (Scarano, 2022).

The choice to thematize mystery, stems from a current need of the human species: the changes in technology, biology and climate continuously bring humanity in front of a new world. Being novel, what surrounds us appears to us as a mystery. Not only we still don't have a clear view of what there could be in the outer space, in the deep ocean, or in the depth of our minds; but also there is still much to learn about the smallest details of life in our cities, in the forests, and in our bodies. *Unknown Unknowns* proposes to thrill the visitor with the mysteries of the unknown, to make s/he realize how vast the mysteries are, compared to our lives. The purpose is not to learn how to solve those mysteries, how to make them disappear, but rather to learn how to co-live with them.

Technically speaking, the exhibition encompasses more than 400 artists, designers, architects and scientists from more than 40 countries. *Unknown Unknowns* is composed of one thematic exhibition, curated by Ersilia Vaudo (astrophysics and Chief Diversity Officer at the European Spatial Agency); 23 international contributions; four installations by the architect Francis Kéré (Pritzker Architecture Prize in 2022); the exhibition *Mondo Reale* curated by Hervé Chandès (General Art Director of Fondation Cartier pour l'art contemporaine); the exhibition *La tradizione del nuovo* curated by Marco Sammiceli (Artistic director of Museo del Design Italiano di Triennale).

The case-study I shall analyze is a project exhibited within the Dutch Pavillion *Have we met? Humans and non-humans on common ground*, which is part of the international contributions to the exhibition. The international participations are fostered by internationally recognized centers of excellence, together with the support of many governments. Participating countries propose diverse perspectives, contexts and environments to invite the visitor to expand his/her vision on the unknown and delve into new challenges in architecture, art and design. This translates into the proposal of creative solutions, which span from systems for living in ecological balance, to possible ways of inhabiting the outer space, to virtual reality environments. Not only are proposed solutions created with the newest technologies, but also they encompass more traditional ways of living and producing, while proposing a vast range of theoretical and practical approaches to some key challenges of our present. An interesting aspect of the 2022 exposition is the strong representation of African countries (6 out of 23), enforced also thanks to the artist Francis Keré, who represented Burkina Faso (it is the first time ever that the country participates in the International Exposition in Milan).

Het Nieuwe Instituut⁷

The Dutch Pavilion *Have we met?* has been organized by the Dutch architecture and design institution Het Nieuwe Instituut, an institute based in Rotterdam, and recognized as the national museum for architecture, design and digital culture of the Netherlands.

Born in 2013, the museum pursues researches on various challenges concerning social development, such as the housing shortage, energy transition, the rise of artificial intelligence, mobility and the use of public spaces. The institute believes that professional figures working in the creative industry, namely designers, architects and digital makers can play a crucial role in the pursuit of social development. Not only the institute is an

⁷ All the information I report on Het Nieuwe Instituut can be found on the museum's website: <https://hetnieuweinstituut.nl/en> (last access: 17/02/2023)

archive for their works, but it also promotes networking with a variety of stakeholders and the collection of knowledge and its dissemination.

The core activity of the Het Nieuwe Instituut is the conservation and management of the National Collection for Architecture and Urban Planning. The collection, constantly updated, is crucial for the exhibitions and research programs of the institute, and witnesses over 150 years of progressive thinking in architecture, urbanism, and design. Moreover, the archive is useful for a number of external parties for the purpose of research and the pursuit of knowledge in general. As one of the largest architecture archives in the world, it includes drawings, sketches, photographs, models, correspondences (both personal and business-related), articles, etc. The main focus is on the modern era, starting from the 19th century.

Het Nieuwe Instituut is also open to other forms of creative production of knowledge, namely art, photography, digital culture and design, especially to address important contemporary topics, such as globalization, the role of the media, the networking society, and the entertainment industry. Those areas are considered important for the development of design. From the educational side, the aim is to teach that design encompasses every field of our everyday life. Moreover, the institute seeks to involve the visitors as possible contributors to design development (being designers themselves), by encouraging them to take a more creative attitude towards things.

Het Nieuwe Instituut also organizes research debates and conferences, where national and international experts in design and other complementary disciplines gather themselves.

The international collaborations of the institute also consist in the participation to international exhibitions, such as the Venice Architecture Biennale and other Biennales like those in Shenzhen, Istanbul, London, the Salone del Mobile in Milan, and of course, the Milano Triennale.

*Have we met? Humans and non-humans on common ground*⁸

The study process followed by Het Nieuwe Instituut to address the proposed main topic of the 23rd Triennale Milano issued in the realization of *Have we met?*. The main aim of the pavilion was to share and advance new ways of co-living between various species: humans and other animals, plants, microbes, fungi, etc. Those entities inhabit the same space, and thus have to learn how to manage and exploit it, without harming each other. Nowadays, while facing the environmental crisis, it becomes more and more important to re-organize policies, develop new technologies and take new attitudes towards the non-human. In western culture, we tend to rely on quantitative data, which provide us objective analysis of what is happening in the environment that surrounds us, with a certain level of accuracy. However, these data can be coldly distant from our common experience of life, and do not, as such, offer the tools that are needed to reorganize the way we interact with non-humans. Starting from these premises, the exhibition presents different ideas and tools on how to understand quantitative data, and turn them into qualitative data, in order to shorten the distance between theory and practice (Zoete and Kuitenbrouwer, 2022). Those tools have been developed by experts collaborating across different disciplines, putting together methods from the traditional sciences with art and design methodologies.

The work begun with the analysis of three existing sites in the Netherlands: the Bodemzicht “regenerative farm” in Eastern Netherlands, an abandoned drilling platform in the North Sea, and the Het Nieuwe Instituut main building and park itself. The areas were studied by three experts coming from different backgrounds, who provided the starting

⁸ Information of this paragraph are taken from both formal and informal sources: some from the official texts exposed in the exhibition, which I quote “Zoete & Kuitenbrouwer, 2022”, some from the webpage dedicated to the exhibition (<https://triennale2022.hetnieuweinstituut.nl/en>), and some others from unpublished texts and personal notes collected during the internship at HNI

point for the development of the various projects presented in the exhibition. They were, respectively, Sander Turnhout, Fiona Middleton and Ania Molenda.

Sander Turnhout is an artist whose research focusses on different topics, such as nature conservation, globalization, postmodernism throughout the past 20 years. He participated in innovative projects and debates in the non-profit creative industry. A nature conservationist and researcher, Sander Turnhout manages multi-disciplinary teams and organizations and is editor for several scientific publications.

Fiona Middleton is an oceanographer, who takes a transdisciplinary approach to research on critical ocean literacy. She is a PhD student at the University of Southampton's Intelligent Oceans program and collaborates since 2020 with TBA21-Academy (art foundation meant to create new artistic languages to talk about the ocean and its ecosystems). She studied geology and marine science.

With a degree in architecture, Ania Molenda works now as an independent researcher, curator and writer; she focuses on the socio-cultural dimension of spatial practices and is interested in developing new forms that bring different discipline together. Besides that, since 2019 she is involved in research on cultural aspects of dealing with complex archives.

The study on the three sites was conducted while following a particular methodology called "Zoöp", which is an organizational tool developed since 2020 from a research group inside the Het Nieuwe Instituut.

Even if the main aim of the exhibition *Have we met?* is not to present Zoöp, this model actually plays a fundamental role for the understanding of the whole exhibition. In fact, the assessments were meant to measure and quantify the interaction between the different living entities present in the three sites. However, the pavilion does not show the results of these assessments, but rather a variety of different objects, that have been developed by

artists and designers as solutions for the co-habitation between species. At a first glance, those objects could seem not to be related to each other; nonetheless, to understand the Zoöp model can help us understand why those objects have been exposed together.

I have known about the Zoöp model for more than a year now, since the first time I collaborated with Het Nieuwe Instituut in September 2021. I admit that it is not an easy project to understand; in this section I shall seek to provide as precisely as possible a description of the ideation, development and creation of Zoöp.

The first embryonal idea for Zoöp was developed in 2018 in the context of a workshop inside *Terraforming Earth*⁹, a series of design laboratories and conferences organized by the institute itself. During the workshop, there emerged the fundamental question whether it was practically possible to make the world habitable in a long term perspective, both for human beings and for non-human ones. Considered that our western society is funded on the principles of capitalism and maximization of profit, the participants at the workshop asked themselves whether it could be possible to create a different system which is based on different principles. Thus, a working group composed of ecologists, artists, designers, financial specialists, philosophers and programmers delved into technologies, legal practices, narratives, and non-western practices, to find out new ways of living and relating with other forms of non-human life. Moreover, a study in the field of Earth Jurisprudence was done as well, especially taking the case of New Zealand as an example (Zoöp). Here, starting from 2014 the Whanganui River, the Mount Taranaki and Te Urewera forest were progressively granted as legal persons with rights, powers, and duties, under the The Te Urewera Act. In this act is also stated that a “guardian” should

⁹ The event is part of a bigger research project that deals with the challenges of the 21st century. The idea is to create a space for reflection on how to think and design new ways of living in the world in a sustainable and thriving manner, both for humans and non-humans. For more information on the research project: <https://research-development.hetnieuweinstituut.nl/en/terraforming-earth> (last access: 17/02/2023)

be elected as a representative for the forest in both legal and policy arenas (Kaufmann, 2020, p. 578).

Another gathering of experts in 2019 pointed out what could have been the aims of the new system, its organizational and legal dimension and pointed out what type of knowledge was useful for its development and pursuit. On this occasion, they invented the name “zoöp”, a shortening of the word “zoöperation”, which stands for the combination of the words “cooperation” and “zoë”, the greek word for “life”.

Practically speaking, the Zoöp translates into the commitment of giving a legal voice to the other-than-human entities, in order to make them acknowledged by the human society, and to practice a form of collaboration within a multispecies ecological community.

The model has been designed in order to adapt to many different kinds of organizations and sites. When an organization decides to become a zoöp, it means that it embraces the specific philosophy of Zoöp, namely the commitment to “support the health of multi-species communities in the ground, in the water, on the land and in the air”, thanks to the help of a so-called Speaker for the Living, namely a person in charge of the representation of the other-than-human life forms present in the spaces of the organization. Moreover, the organization commits to report yearly on its objectives and planned interventions, in order to produce tangible changes in its practices within a year. This annual cycle has to be revised every year and adjusted accordingly to the progress made – always respecting the natural timing of all entities involved. The Zoöconomic Annual Cycle (as it has been named) is a precise methodology that serves as a starting point from which to develop the goals for the improvement of the ecological conditions of a given site and the implementation of new tools to make this development publicly legible. The annual cycle is divided in four steps: Demarcating, Observing & sensing, Characterizing and Intervening.

The first stage (“demarcating”) consists of the description of the site in spacial terms (what are the physical structures that demarcate the zoöp?), in legal terms (“what are its boundaries in legal terms? What parties have what kinds of rights?”), in ecological terms (“what are the ecological boundaries? What elements of the surroundings belong to the ecosphere of this zoöp?”). Here it is important to include in the study the perspective of the non-human entities inhabiting the site.

The second stage requires the observation and multi-sensorial perception of how the bodies of the zoöp perceive each other, whether they can or cannot perceive each others and in which ways.

Thirdly, the “characterizing” stage is an analysis of how those bodies interact with one another, and of whether they are able to support each other, whether they hinder each other, or simply ignore each other. Here the focus is on the interpretation of the general wellbeing of the ecosystem of the zoöp. At this point, the information collected in steps 2 and 3 is put together and used to create a list of possible interventions. Finally, the “intervening” step requires the concrete implementation of changes in the spacial arrangements, in the management practices and in the relational fabric of the zoöp. At least one intervention per year is required, in order to improve the quality of life of the community of the zoöp. These interventions must be pointed out each year. They can be diverse, ranging from the improvement of soil quality, to the introduction of new species, to the integration of special policies that ameliorate the relationships between human and non-human beings.

DataFusion Instrument

One of the instruments on show in the exhibition as a useful tool for the Speaker for the Living is the *DataFusion Instrument*. It is my intention to describe it in this paragraph, provided the informations that I collected during some conversations with the group that

designed it. As mentioned above, the whole Pavilion was meant to present instruments, narratives, activities, etc. which could somehow facilitate the improvement of the ecological integrity of the assessed site (the Zoöp taken on analysis). The DataFusion Instrument is a tool, which has been thought from the very beginning to facilitate the work of the Speaker for the Living. Within the pavilion, it was placed on a table showing all the instruments developed for the Het Nieuwe Instituut museum and garden. The assessment for this site was done by Ania Molenda, who was involved for the first time in the Zoöp project, but had already collaborated with the Institute for several previous researches (for instance, she was also involved in the previous Triennale back in 2019). In her research she is interested mostly in the social interactions in the architectural and urban sphere, but in the recent period, and mostly in this project, she got more and more involved with ecological works, as she realized that the social aspect is strongly entangled with ecology. Thus, for the assessment of the Het Nieuwe Instituut site, she interviewed various people working there, which is a common approach in the social sciences. With those, she tried to understand the organization as such, from the inside and to which extent Zoöp has an impact on the organization, whether they feel a part of it or not. Another, first assessment was done a couple of years ago, and that just partly helped Molenda's work. The Zoöconomic baseline assessment by Ania Molenda is structured on the four parts of the Zoöconomic cycle that I mentioned above. Thus, the first one (Demarcating) lists all the elements that make up the Zoöp, from the non-human bodies (animals, plants, insects, air, etc.), to human artifacts (pipes, cables, lamps, bins, paving, fences, etc.), from the organizational bodies (the café, the departments of the museum, its collaborators, etc.), to the legal ones. In this part she includes some maps of the museum and the garden to render a graphic overview of what she is studying. In the second stage (Observing & Sensing) she explains what methods she employed for the conducting of the research and who are the people she interviewed. The "Characterizing" part is where

she makes some considerations, based on what she understood in the interviews and she reports what the people said to her. In the last part, the “Intervening”, makes a list of the proposals that emerged during the conversations.

The assessment and the development of the instruments for the exhibition were conducted simultaneously, even if the products would have helped both parts during the process. As Molenda told me in an informal interview, when she saw the objects in the exhibition she wished she would have had those before starting the assessment¹⁰. She admitted that those would have made her work much more complete. This means, that what was exposed in the Dutch pavilion at the Triennale is a work of speculative design, as it shows something useful in a situation which has not yet occurred, but is very likely to happen in a short time. Interestingly, the tools exhibited at the Triennale have the potential to help in further assessments of the site, further developing on Molenda’s work. One last thing that it is worth mentioning is that Ania Molenda conducted the assessment without any specific guidelines or requirements. Indeed, the three assessments (the HNI, the drilling platform, the regenerative farm) result in a very different way, depending on the assessors themselves (an architect, an oceanographer, an artist) and their interests or curiosities¹¹.

The *DataFusion Instrument* is the result of a collection of data via technological sensors, positioned in the garden of Het Nieuwe Instituut in April 2022, for a period of eight months. The sensors are 48 in total (some sensors could capture more than one kind of data in just one instrument), and they read a precise portion of the garden, that measures a volume of 30m x 30m x 3m(h). Provided of both digital and analogue sensors, the instrument captures and registers 24/7 all the non-human entities present in the garden, also those which are difficult to perceive with human senses, such as the sound

¹⁰ Online interview from 15/12/2022 between Ania Molenda and the author (see Appendix I)

¹¹ I have written about them a bit more in detail in the first part of this paragraph

frequencies of insects, the electromagnetic waves and conductive capacity of mycelia growing underground, the smell and spread of pollen, the vibrations of machines and human footsteps, heat traces of small bodies moving during the night, the slow changes of humidity in the air. There are many different layers of data collection, which employ different instruments, encompassing satellite sensors, thermal cameras that capture movements happening at night, microscopes that detect the smallest parts of the garden, such as fungi, mycelia, etc. for a total of 48 sensors installed in the area of the garden. These tools serve not only to better detect all the forms of living beings in the site, but also to study the traces they leave, and the way they interact with each other. To us, there are many things of an ecosystem which are difficult to sense and even more complicated to experience all together. The *Data Fusion Instrument*, in this sense, is an attempt to make it possible to experience, and take into account all the parts of the environment, even the tiniest and most unperceivable.

In the exhibition, the work is translated into three elements: the “Transparent Archive”, the “Capsules” and a website that collects live all the data.

The “Transparent Archive” (fig.5), as it was named by the group, consists of a transparent box, with a series of drawers one above the other. Each drawer contains something which is meant to recall the various layers of data collection taken on analysis: the first one contains some soil, another some leaves, flowers, the feather of a pigeon, another one shows some trash that have been picked up from the garden, another contains the blow-up of a mycelia observation from the microscope. As Eric Kluitenberg, the leader of the project, told me, they decided to use a transparent material for the archive, because they wanted simultaneously to show all the different parts of which the garden is composed, and convey that all the elements are then mixed with one another¹². You can either decide to look at a drawer singularly, but when you open them all it is difficult to distinguish the

¹² Online interview on the 16/12/2022 between Eric Kluitenberg, Rodrigo Delso, and the author (see Appendix I)

various layers of which it is composed. This work permits the audience to have an “analytical” experience, meaning they are able to experience visually what has been observed by the artists during the data collection.

Another work is what the artists referred to as the “Capsule” (fig.6). On the fabric that delimits the pavilion have been opened two holes in which the visitors are invited to put their head in¹³. Here they can hear a sound recording that combines soundings captured by the sensors of the park, while seeing an alternation of lights, colors, and images, also provided by the sensors. The peculiarity of this work is that what you hear and what you see follows a very different rhythm: sounds change very slowly compared to the images, which instead move very fast. This is meant to make people experience the different waves of intensities and rhythms of the collected data: the choice to separate the sounding from the visual, can be interpreted as a strategy to make the observer understand that what s/he is looking are data coming from different sources. Even if the analyzed piece of soil is quite limited, the collected data differentiate in many aspects between one another. Moreover, this work also lets the visitor experience the complexity of the data as a big whole, for which many lives are taken on account singularly, but which assume significance when put together. Originally the system of the capsule was designed to process and thus show realtime data at the Triennale. Unfortunately, this was not possible because of internet connection issues.

Finally, the last work, namely the website, provides and makes accessible all the data that have been constantly collected by the sensors. In the exhibition, this could be consulted

¹³ There is an interesting anecdote to point out regarding the realization of the “Capsule”. In the first spacial design, Studio Ossidiana (the studio in charge of the space design of the pavilion) proposed just one hole at an height of an average adult person. It was a request by Kluitenberg himself to add an additional hole, because he thought that the capsule should have been experienced by a children as well, without the help of a parent to reach the hole. The request was taken with enthusiasm, and thought as inclusive for people in wheel chairs as well. However, in the final spacial design realization it was decided to cover the floor with sea shells, and that unfortunately prevented people in wheel chairs from entering the pavilion (information emerged in the interview with Kluitenberg and Delso on the 16/12/2022).

via an iPad. The website as well was meant to be showing realtime data, but due to obstacles related to the wifi connection, it was not always working.

Together with this tangible elements, which can be seen in the exhibition at the Triennale, the group also organized some open-air activities in the garden of Het Nieuwe Instituut, where the team-members developed a method to become “sensors by their bodies”. They called this activities “Participatory Rituals”: they consisted of very slow walks through the 30 square meters garden, which took more than half an hour each. Here, one member of group provided some instructions to follow, in order to connect with the other-than-human entities inhabiting the garden, to really experience the space in all of its parts, become aware of the environment, and ideally start to sense how the self is part of an ecological system. They were asked to sense all the sounds (be they of birds, other animals, water elements, air in the grass or trees, etc.), touch the ground, smell the air, etc. This type of practices were inspired by the *Sonic Meditations* proposed by the performative artist and composer Pauline Oliveros (1974). Oliveros gives instructions that guide us towards an enhancement of our “sounding consciousness”, namely our capacity of capturing sounds, consciously and constantly. This approach draws on practices of meditation. In this way, as I was told by both Andrzej Konieczny and Christine Groenborg, the artists had the possibility to distance themselves from the raw data, to embrace the idea of being in the place and experiencing it directly.

The work has been conducted by a group of six students of the ArtScience Interfaculty of the University of the Arts, The Hague, who were selected by Klaas Kuitenbrouwer (curator of *Have we met?* and creator of Zoöp), Eric Kluitenberg (teacher of the ArtScience interfaculty), and Rodrigo Delso (researcher in architecture that collaborates with HNI and the Zoöp project) after an evaluation of their portfolios and a motivational letter. Originally, the project would have involved just four students, but after having seen the variety of

interests of the candidates, it was decided not to lose the opportunity to work with a plurality of practices. The selected students are Leon Lapa Pereira, Christine Hvidt, Vivien Vuong, Andrzej Konieczny, Philipp Groubnov and Alexander Knöppel. Another fundamental contribution came from the architect Rodrigo Delso, who had already collaborated with Klaas Kuitenbrouwer inside the Zoöp project.

To paint a picture of the multidisciplinary character of the group, in what follows I shall provide short presentation of the artists involved.

Rodrigo Delso holds a PhD in Architecture and a Master in Research Architecture at the Goldsmiths University. He is co-founder of the studio JARD, which deals with the research of artificial and automatic architecture. He is interested in the temporal variable in built environments, and thus defines himself as a “chronopath”. For the *DataFusion Instrument*, he observed the thermal cameras that were running at night, and thus studied the nocturne fauna of the garden. Philip Groubnov is a multi-disciplinary artist, from Belarus, interested in the relations between human culture and non-human beings. Christine Hvidt is as well a transdisciplinary artist, and is particularly fascinated by systems thinking. Her current practice focuses on how human sensibility towards the natural world can be strengthen and nurtured. She studied at the Aalborg University Art and Technology. In the project she sampled mycelia of the garden and developed self-made instrument to sense electromagnetic fields¹⁴.

Andrzej Konieczny has a PhD at the Academy of Music in Poznan and works at the University of Arts in Poznan at the Faculty of Animation and Intermedia. He is mostly interested in music, as he composes and plays. He has a specialization in contemporary electronic and improvised music. He is interested in the neuroscience-related fields that study music reception, such as cognitive science and psychology. In the project, indeed,

¹⁴ Online conversation on 06/01/2023 between Christine Groenborg, Andrzej Konieczny and the author (see Appendix I)

he took care of the translation of the data into a sound experience, which can be heard in the “Capsule”¹⁵.

Alexander Köppel has a formation as an artist, spacial designer and musician. For this reason, his work seeks to fuse sound and space into sensorial experiences, which he translates into installations, sound productions, sound performances, visual and narrative elements. He is interested in the investigation of big existential themes such as time, perception, and immaterial value.

Leon Lapa Pereira is a performance researcher and works as a facilitator. In this role he tries to merge making and thinking within an intergenerational environments. In his artistic practice he seeks to develop ecologies, in which humans and “the vegetable other” can experience each other. His works are often translated into kinetic installations, robotic agents and performances.

Vivien Young is an artist that deals mostly with sensory participation, responsive materials and environments that foster attention towards our own interior and that of the other, or otherness. Her research is focused on the complexity of the breath of human and more-than-human, and she experiments with technology. In the project she sampled some pollens of the garden and collaborated with the pollen lab at Leiden Medical Centre to analyze the data.

Eric Kluitenberg distinguished three main moments in the production process: “capturing”, “translating” and “interpreting”. Even if I will list them out linearly, the process was rather circular, and its different parts tended to happen simultaneously.

The first, obvious phase involved the “capturing of data”: during this part, each student focused on one entity they were interested to, either because of previous interest or to which they curiously approached for the first time. They looked at the different sensors,

¹⁵ ibidem

also according to their skills: some of them focused on a particular element of the environment (e.g. mycelia), some others were more interested in more intangible things (e.g. the auditory environment).

Another moment identified by Eric Kluitenberg was the “translating”, in which the group put an effort for the translation, indeed, of the collected data into something tangible, with the aim to communicate them. This part was the most important for the exhibition, as it was meant for the displaying to a public at the Triennale. In this part the artistic skills emerged more explicitly, and the different backgrounds of the artists were very useful for the realization and production of the different outcomes. Moreover, the variety of backgrounds of the students came at its strongest and merged together.

We can point at the “Transparent Archive” and the “Capsule” as the two main results of the translation phase. In this regard, Eric Kluitenberg distinguished two levels of the translation phase: one analytical and one experiential. The “Transparent Archive” is mostly analytical, namely it gives you the possibility to analyze the various layers of which the garden is composed, and thus get into contact with the nature of the data, while discovering what materially have been collected and studied. The “Capsule” instead gives you the possibility to experience the data. To say it with Kluitenberg’s words: “when you stick to the hole on the fabric of the side of the pavilion, then you look into that domain, a space that is entirely experiential, you just experience something which is not explained, it is just sound and image. Also in a bit weird spacial configuration and a strange way of looking.”

Finally, there was what Eric Kluitenberg called the “interpretation” phase, in which the researchers took the data, presented it to the others and tried to give a meaning to them, or tried to find something significant out of them. For this phase the “Participatory Rituals” were very important for the pursuit and the continuation of the research. The group, indeed, was able to collect impressions, feelings and sensations from each other

and understand how diverse the experience of the garden can be. Based on what they gathered from capturing with the body, then, the group went back to the “collection” moment with a renewed perspective and thus, with a different understanding of what they were doing.

From a conversation I had with Eric Kluitenberg and Rodrigo Delso, it emerged that the audience can be divided into three layers. The first and most obvious layer is the Triennale audience, yet not the first one taken into consideration. Another level of audience was the commissioner Het Nieuwe Instituut and, more specifically, the Speaker for the Living (which is, I remind the reader, the person in charge for the representation of the other-than-human life inhabiting in the spaces of the zoöp). Finally, one last level of audience was defined during the design process, and this is, the so-called “the general public”. A short focus into the design process will better explain the three levels of audience I am talking about.

When Zoöp commissioned the project, the group was not intended to be guided by the notion of the instrument *per se*, since that would have already constrained them too much. Even if the Zoöp model has a clear, defined interest (that of developing a set of instruments and/or approaches that can help to read and measure the ecological integrity of a site), the artistic group decided to take carefully the notion, and preferred to exploit the (almost) totally open space in which they had been allowed to work.

Once determined the task, the two other constrains were the budget and the fact that the instrument(s)/approach(es) should have been presented in the exhibition (which are in the end standard premises). In this first stage they did not have a specific audience in mind, but implicitly addressed a typical cultural audience, made of people interested in the arts, contemporary art, design, experts and students of the fields, etc.,¹⁶.

¹⁶ The audience of the exhibition emerged *practically* as an important target to consider, only when the capsule was designed, for the reasons I explained in the previous footnote.

In this regard, it is important to remember that the project was in the first place commissioned by the Zoöp itself, as something that could be useful or somehow facilitate the task of the Speaker for the Living. During this phase, the group put an effort in order to understand and present the huge amount of data they were collecting, and translating them into a tangible experience, so that people who came across it could somehow experience “what are the invisible layers that make up a garden”. Here, the group realized that they should not have focused just on something that could work exclusively in the Het Nieuwe Instituut garden, but they tried to develop something which could be very flexible and intuitive. They wanted the instrument to be used by different people, in different sites and not necessarily just for those aspiring to be a Zoöp. So, with this reasoning in mind the audience changes, because is no longer limited to standard Triennale visitors, but can be expanded to “literally everybody”: for instance farmers of the rural France, willing to know more about the ecological integrity of their lands and thus expand the possibilities of the ecological interactions between species there; or a owner of factory in northern Italy, who is wondering what kind of living entities are around their working place; or again, the people of a residential district in Berlin who want to understand if the flowers they have planted in the common garden are actually contributing to bring new organisms in the place or are an obstacle for that. For this reason, as Eric Kluitenberg told me in the conversation, from the very beginning the group was trying to develop something which could possibly last longer in time and get further than just the research phase.

Chapter 3. A Multidisciplinary Analysis

The DataFusion Instrument as seen through multidisciplinary lenses: the ecological perspective

It is intuitively easy to understand that what is proposed by the Zoöp model, namely to encompass non-human entities in the decision making processes, is a fundamental requirement for the preservation of a given site. Even if not explicitly, the model proposed by Zoöp has a strong ecological imprinting at the basis. In this section I will try to give some key concepts of ecology, in order to argue that in the Zoöp project there is as well a “scientific” justification to the study of all the entities of an ecosystem, considering them with the same level of importance.

We refer to ecology as the discipline that studies the relationships between the organisms and their environment. The term “environment” encompasses not only the biological and living components of a place, but also their chemical and physical conditions. For “relationships”, we intend the interactions between the various organisms, as well as within the physical world (Smith, 2012, p.2).

Even if the human species has always been interested in studying the surrounding environment (see for example the *Enquiry into Plants* by Theophrastus in 300 BC, or the studies by Aristotle on animals), it is difficult to retrace the origins of the discipline (Smith, 2012, p. 3). It is common to recall that in the early 18th century there was a dispute among the scientific community, that was divided into two lines of thought: the so-called Arcadian ecology, and the so-called Imperial ecology. The first position advocated for an harmonious relationship between humans and nature: nature was seen as a benign mother that, if respected, assured peaceful coexistence between living beings. The name Arcadian was chosen after the Greek region that traditionally has been associated to a place where harmony reigns between humans and nature. The second position, the

Imperial ecology, instead, saw nature as a source from which humans could benefit according to their needs. This was an utilitarian perspective of nature. The imperial ecology became finally the dominant position, since Carl Linnaeus, a very influential naturalist, stand with it. Even if the imperial ecology is nowadays far surpassed among ecologists, this conception of nature is still present in our culture, and influences human's relationship with the natural world.

The first definition of the term "ecology" was provided by the German scientist Ernst Heinrich Haeckel in 1870: "By ecology we mean the body of knowledge concerning the economy of nature [...] Ecology is the study of all the complex interrelations referred to by Darwin as the conditions of the struggle for existence." Nonetheless, the term ecology was institutionalized only in 1913 with the formation of the British Ecological Society. However, there was not an agreed official definition until 1953 when the American ecologist Eugene P. Odum proposed to define the discipline as "the study of the structure and the function of ecosystems" in the context of his publication *Fundamentals of Ecology* (1953).

Many scientific voices contributed to the development and enrichment of the discipline of ecology. Another figure not less important than Darwin is Gregor Mendel (1822 – 1884), who studied the transmission of genetical features in a pea cultivation in his garden. Together with the studies on natural selection by Charles Darwin, they built the basis of the so-called population genetics, the field-study that analyses the patterns of evolution and adaptation. Finally, a fundamental contribution comes from the considerations on population made by the economist Thomas Malthus (1766–1834). According to him, populations grow following a geometric pattern, at a very fast rate. The growth of resources, instead, follows a much slower process. To re-balance the two growths, there can be two types of response: either birth is reduced or mortality is increased (Galimberti, 2006). From this considerations, two new branches of ecology were developed, namely

the population ecology, which studies how populations grow, and how their interactions are regulated, and evolutionary ecology, which is concerned with the role of natural selection in the adaptation of species in an environment (Smith, 2012, p. 3).

To conclude this brief retracement in the history of ecology, I think it is also important to mention the studies by ethologists such as Konrad Lorenz and Nico Tinbergen on the behaviors of animals in their social life (conducted through the observation of birds and fishes mostly) and the integration of the inquiries on the cycles of chemical substances in the natural world (Smith, 2012, p. 3). All the scholars that I just mentioned, cannot be referred to as proper ecologists, since, as just pointed out, the discipline is quite recent. Those characters are mostly considered as “naturalists”, meaning that they were studying nature in a large extent, from plants to animals all together, without specializing in something in particular and in some cases resulting in philosophy.

From this introduction in the history of ecology, it is easily noticeable that the discipline studies very different aspects of the environment, and thus has the necessity to draw from many other different disciplines, to have an exhaustive frame. The discipline of ecology, indeed, divides in many branches, all of which study a specific aspect of the environment: population ecology, for example, studies populations (how they grow and how they interact with each other). Evolutionary ecology, instead, studies how natural selection affects physically and behaviorally the species, when they are forced to adapt to a changing environment. More specific on the study of adaptations there is the so-called physiological ecology, which studies the responses of organisms to environmental conditions (e.g. variations in temperatures, light, water abundance, etc.). Another level of ecological analysis happens at the landscape level, and thus the so-called landscape ecology studies what are the causes of landscape changes (Smith, 2012, p. 3).

The study of an ecological system, indeed, requires the analysis of physical, biological and chemical processes, as well as the relationships between organisms and the environment. In this sense, subjects like geology, meteorology and hydrology are very useful (Smith, 2012, p. 12).

As already mentioned, ecology is the study of the interactions of organisms in an ecological system. The term ecological system refers to the organization and interactions of communities of living things, together with the chemical and physical factors in their environment. The interactions between organisms happen at many levels, and their physical and chemical conditions work together and are fundamental for the survival and growth of the system. This means that, in a system, organisms must provide themselves resources from the surroundings, and at the same time have to preserve themselves from not becoming food for other organisms (Smith, 2012, p. 2). The very etymology of the word ecosystem suggests that the environment is a “system”. That is a set of different components that only function as a unit. These components can be distinguished into two main categories: the biotic, namely all the living components of an environment (such as animals, plants, fungi, etc.) and the abiotic, namely the habitat, the structure that corresponds to the physical and chemical conditions of the environment (Smith, 2012, p. 4).

Ecosystems are characterized by four main features: the nesting of system, the interdependence, the cycles, and the changing.

The nesting of system refers to the fact that, conventionally, ecosystems are divided into a hierarchical system, to facilitate the analysis of their organization. The first level of analysis is directed to the individual, which studies the physiological, evolutionary, and behavioral mechanisms played by an organism to cope with ecological challenges. In other words, the features that an organism possesses and that allows it to survive, grow, and reproduce in a given territory. The second level of analysis is the population, namely a

group of individuals of the same species that occupy a given area. In an ecosystem there are always more populations that interact with each other, and in many cases also fight for the limited resources of the environment (e.g. for food, water, or even space). Also, populations can benefit from each other. If we start to take under inquiry the sum of the populations of the ecosystem and their interactions, we are studying another level of the system, which is referred to as community. The spacial context in which all these interactions happen is the landscape, which according to Smith, can be defined as “an area of land (or water) composed of a patchwork of communities and ecosystems” (Smith, 2012, p. 4). In this broader context, communities and ecosystems are linked through the processes of dispersal of organisms and the exchange of materials and energy. Even though the ecosystem in each landscape is unique in its physical components and the communities in it, we can trace regional patterns in the distribution of landscapes, which are related to the climate and the geology of the territory. In other words, regions that have similar temperatures, precipitation-patterns and seasonality, usually present similar types of communities and ecosystems (Smith, 2012, p. 5). Those can also be referred to as biomes. Finally, the broadest level of analysis of an ecological system is that of the biosphere, in which all the ecosystems are connected with the other components of the Earth system (atmosphere, hydrosphere, geosphere), via their interactions happening through the exchange of materials and energy.

I shall now provide the reader with an example of an ecosystem and its division in the components just mentioned. Consider that I want to take on analysis my garden and some of the species it contains. At the individual level, in particular, I want to study the blackbird, which is a bird that I often observe in my garden. I will thus identify what are the particular features of the blackbird, that allows it to thrive in my garden. Then, if I want to study how the blackbird lives in my garden at the population level, I will start to investigate whether the blackbirds that move around my garden are more or less,

compared to the past two years, and/or how their number has been changing from year to year. What comes next is the community level: here, I will ask how the blackbirds interact with the pines, the walnut, the laurel, the worms under the ground, etc. Considered, then, that the garden is obviously subjected to weather patterns, I can also get deeper in the study of how the strong drought of the past summer influenced the presence of blackbirds in my garden. Finally, some considerations can also be addressed at the landscape level, for instance by asking how last summer's drought influenced as well the community compositions of the gardens of my neighbors.

A second important feature of ecosystems is the interdependence. While approaching to the study of an ecosystem, it is a fundamental requirement to keep in mind that all the components of an ecological system are connected in time and space. Taking again the example of the blackbird, it is quite intuitive to understand that its survival depends on the availability of worms in the terrain of the garden. Similarly, the availability of worms depends on the quality of the ground and the quantity of nutrients, which depends on the precipitations and so on and so forth. The ecosystem, thus, is a very complex net of relationships.

Interdependence is related to the last two features of ecosystems: the changing and the cycling. The former refers to the dynamism of ecosystems, as the compositions of its community, the relationships between species, the population rates, the nature of its physical and chemical conditions, etc. are constantly mutating in time. For instance, to take an example of a species near my everyday experience, the population of crabs in the lagoon of Venice have been changing in the last years. Indeed, starting from 2019 mostly, it seems that the population of crabs have been substituted with a population of blue crabs, as they have well adapted to the habitat. The effects of this increase in the population of blue crabs at the expense of the traditional crabs are not well predictable and quite unknown yet. I shall provide a further example always in relation to the lagoon

of Venice: it is predicted that the species thriving and reproducing there are very likely to change in the near future because of the increase of the use of MOSE (the mechanical regulatory system for the regulation of high tides, to avoid that too much water enters the city of Venice), but it is difficult to detect the extent and the effects of those changes. This examples suggest that both species and the physical environment (the biotic and abiotic components of ecosystems) determine the changes: via their interactions, species either increase or diminish their rates. Moreover, it can also happen that a small change in the local can have repercussions in a bigger ecosystem: the sum of changes on small ecosystems could produce significant impacts in larger ecosystems. As already mentioned, since it is not always simple to predict what a change of a species can produce on an ecosystem, there can also be repercussions on species that are not so obviously interconnected.

Finally, for what concerns the cycling in ecosystems, it comes without saying that matter continuously cycles in the ecosystem: it is produced, consumed and decomposed through the biotic and abiotic.

From this overview, it appears clear, I hope, that for the good functioning of an ecosystem all of its parts, from the tiniest to the biggest, must work properly. This notion comes useful if we want to position the *DataFusion Instrument* into this context. The question that I want to address is: what is the point to take on analysis all the elements of an environment, to the point to give them political agency? A possible answer from ecology could be traced in what I have been talking about in the lines above, that is: the functioning of an ecosystem is determined by its interactions. The more interactions are played in an ecosystem, the more the system is functional. The effects that it produces can be seen at the local level, such as the improvement of the quality of soil, or the mitigation of local temperatures, but in a certain extent also at the global level, as the sum

of good practices can make bigger changes possible. These “good effects” are also experienced and benefited by our species, even if we are not very aware of that. According to the IPBES Global Assessment Report, indeed, nature and its contributions to people are fundamental for humans existence and their wellbeing. It is from nature that we provide ourselves with food and resources for sustaining our lives. If on the one hand, some processes are enhanced thanks to human infrastructures, there are yet some of them which cannot be replaced by technology: “while anthropogenic assets – knowledge and institutions, technology infrastructure and financial capital – can enhance or partially replace some of those contributions, some are irreplaceable” (IPBES, 2019, p. 10). It has been demonstrated that human action significantly altered ecosystems and biodiversity rates (IPBES, 2019, p.11). This puts at risk the capacity of providing the services that us, as human species need as well.

The work of data collection pursued by the artistic group of the *DataFusion Instrument* can actually be compared to a work that an ecologist would do: to study an ecosystem, ecologists consider the interactions of its components. That means, they have to collect as much data as possible from the various components of the ecosystem, and then study how they affect each other. Similarly, the artists collected a big amount of data, and analyzed it. However, the destination of these data and the way those were presented was much different from what an ecologist would have done. The artists, in this sense, worked in order to permit the visitors to somehow experience the data, and get emotionally involved with all the entities in the garden of Het Nieuwe Instituut.

I shall now describe one tool used by ecologists to convey that in ecosystems all entities are interconnected and contribute to the well-being of each other: the ecosystem services. We define as ecosystem services all “the contributions to ecosystem structure and functioning – in combination with other inputs – to human well-being” (Burkhard,

2012, p. 1). Ecosystem services can be categorized in three main type of services, which are: 1) regulating services, that are the benefits obtained from the regulation of ecosystem processes; 2) provisioning services, that are the products obtained from ecosystems; 3) cultural services, namely the intangible benefits that people obtain from ecosystems (Alcamo, 2003, p. 56).

Taking the garden of Het Nieuwe Instituut as an example, the regulating services from which the system can benefit are the regulation of local temperatures and the improvement of air quality, thanks to the presence of trees and grass, or even the quantity, distribution and effectiveness of pollinators. Provisioning services, instead, can be the edible fruits that a tree of the garden offers, or more “ornamental resources” (Alcamo, 2003, p. 59) such as flowers. This links with the cultural services, which is a category a bit more difficult to define, as it is more related to the subjects and their beliefs, values, and behaviors, and are very likely to vary in time and space (Alcamo, 2003, p. 59). In other words, for example, to a visitor that lives in a mountain area, the garden of Het Nieuwe Instituut may appear banal, and not at all refreshing, compared to the landscape that s/he is used to enjoy everyday. Whereas a Rotterdam resident who spends most of the week inside an office can feel relieved by spending some hours sitting in the grass, while reading a book under the shadow of a tree.

We can interpret the ecosystem services as a trial to involve more the human species inside the ecological rules. Both the ecosystem services and the *DataFusion Instrument*, indeed, address one particular, problematic issue that concerns our species, namely the impression of being a privileged species. When we discuss about the environment, it seems like as if we were obsessed with the preservation of the Earth. However, from a geological point of view, life in the planet would survive without our species, with a different biodiversity, after having recovered from the human species impacts (Gould, 1997, p. 64-65). In this sense, the *DataFusion Instrument*, similarly to the ecosystem

services, tries to integrate *again* the human species inside the logic of the ecosystem. In other words, the human species has to learn that it is part of the ecosystem itself, and thus a disfunction of the ecosystem can have consequences directly to human's quality of life.

A critique that can be advanced in the conceptualization of both the ecosystem services and the *DataFusion Instrument*, or the Zoöp methodology, is that both approaches failed to get out of anthropocentric dynamics. On the one hand, the Speaker for the Living is nominated to be a representative of the non-human in the legal sphere: jurisprudence is an anthropogenic structure, and a concept which is completely ignored by the non-human. On the other hand, the ecosystem services are as well inserted into an anthropocentric logic, since the interest is always aimed at the needs of the human beings and their quality of life on Earth. Nonetheless, to use already-existing structures in the human sphere is perhaps necessary, if we want to entangle a new understanding of our relationship with the ecosystem, as it is the only way we know how to read reality. The ecosystem services, thus, are a first attempt to make our species aware that in biological terms we are dependent from nature, even when we do not realize it. The human species is as inside the ecological rules as any other species in the Earth system, and there is no way to escape that.

The *DataFusion Instrument* as seen through multidisciplinary lenses: the anthropological perspective

The *DataFusion Instrument*, following the system proposed by Zoöp, deals with some crucial environmental issues, that very appropriately integrate in a precise interpretation of the ecosystem, by which there is no distinction between ourselves (the human species) and what we call the "natural world": I shall present it more in details in this paragraph. This interpretation relies on new theories that emerged in academic discussions in the

recent years, and which put forward non-anthropocentric views of the ecosystem. Among the others, one scholar that dealt with the reconsideration of the non-human as worth being included in the decisional processes, quite successfully and with a positive response from the academic community, is the French anthropologist Bruno Latour. In particular, I shall now consider his publication *Où atterrir? Comment s'orienter en politique*, published in 2017 in the French version and translated in 2018 in English with the title *Down to Earth. Politics in the New Climatic Regime*. Throughout the text, Bruno Latour builds some considerations upon one of his previous publication *Facing Gaia: Eight Lectures on the New Climate Regime* (2017), where he presented what the New Climate Regime is, namely the present time in which we live, and where our relationships with the Earth inevitably determine the faith of our future (Godoy, 2020).

In *Down to Earth*, interestingly, Latour proposes first of all an historical analysis. He argues that recent historical contradictory events, in specific Brexit (2015), the elections of Donald Trump as president of the U.S. in 2016, migration issues and the signature of the Paris Agreement (2015), are all strongly related to the big problem of the climate crisis. They are responses of contemporary world's institutions to the violent reaction of the Planet to the stress that human activity brought (Gleason, 2019, p. 980). According to Latour, the political situation will remain the same, unless we decide to face seriously the issue of climate change and its public denial. It is crucial to learn how to live in a world where every entity has agency. Latour, therefore, asks the human species to come "down to earth", namely to redefine its concepts of Local and Global, of nature and society, of matter and reality, the system of reproduction, and of course of being human (Gleason, 2019, p. 980).

Latour suggests that the leading elites of the contemporary world recognized that the Earth cannot cope with the Modern system of production and consumption, and responded by covering things up, and fostering the denial of climate change. Importantly,

Latour sustains that this problem does not have cognitive roots, but rather ontological ones: it is connected to how reality, matter, nature, and politics really are (Gleason, 2019, p.981). In other words, all entities on the Planet are interconnected, and the human species should take this into account.

One solution, according to Latour, would be to start to avoid polarizations, such as Left/Right, Local/Global, etc. and start to think in a completely different way (Latour, 2019, p. 32). In particular, and he poses this at the core of his proposal, he suggests to change the perception of ourselves as Modern, to perceive ourselves as Terrestrials. This means that we must recognize we are all part of the Planet, together with the non-human beings. Non-human beings should have as much importance as we have in the political sphere.

Latour proposes the Terrestrial as a new attractor to pose besides the Global and the Local dichotomy, and as the third, right attitude to take towards our experience of living beings on planet Earth (Latour, 2019, p. 42). Moreover, Latour reflects on the space we inhabit: "Space is no longer that of cartographers, with their latitudinal and longitudinal grids. Space has become an agitated history in which we are participants among others, reacting to other reactions" (Latour, 2019, p. 42). This quote refers to the fact that, according to the sociologist, when the Earth was seemingly "stable" (that is, the actions of the human species did not have any particularly visible consequence in our lives), it made sense to talk about space, as a territory that we occupied and that belonged to us. Yet, because of the relevant pressure we exercised on the earth's ecosystem, it is as if the territory itself began to participate in history, to have agency, and thus, put human beings at its same level. In this context, the role of politics would be to understand that geography (the territory) is as much important as human actions in writing history.

Latour continues by arguing that he is aware that the ecological movements have tried to include the non-human inside the decision making process for many years now, but he also reflects on the fact that this was an unsuccessful attempt, since also in this case,

the discourses are based on a dichotomy: ecology have always been contrasted to economics, and the stress is always on how nature has been exploited for the cause of economic progress, and the social injustices that derive from this. Sadly, this narrative contributed to reinforce the polarizations between nature and progress, as it revolved around a concept of nature as something that has to be preserved. This narrative, even if it may sound just, actually continues to stress the separation between entities, whereas a more suitable understanding of nature would see all the elements interconnected and interdependent from each other (Gleason, 2019, p. 981).

Latour retraces what happened in the history of humanity that brought us to this understanding of nature as a separate container from which to collect resources: from the 17th century on, economists started to see nature as a means of production, a resource that was external and indifferent to our actions, grasped from afar. They talked about a “system of production”, because everything was settled towards that purpose: the only ones to have agency were humans and artificial infrastructures, and the possibility of agency for the natural other, for non-human beings, was never taken into consideration (or at least, not seriously so). In this world, there was no place for the idea of interdependency among entities, or maybe interdependency made sense just to the extent that natural resources were seen as available to be exploited for human interests. Moreover, Latour states that, if ever there were proofs of possible adverse consequences of this world view, the strong elites would have tended to cover them up (Latour, 2019, p. 75).

Latour also reflects on the role of the sciences in this narrative of nature, and maintains that a change in our relationship with the sciences is also needed. He sustains that there is a polarization between the sciences that consider nature as universe and those that see nature as a process. On the one hand, nature-as-universe takes nature to be a body among bodies, that is nature is studied as an object separated from human’s activities

and actions. Whereas nature-as-process, on the other hand, sees the Earth as a whole: there is no hierarchical distinction between the planet, humans, non-humans, etc. He compares the world made of *Galilean objects*¹⁷ with the world made of *agents* described by James Lovelock (1979). According to Lovelock, the Earth is to be seen as full of living beings that have agency and participate in the geological and chemical processes happening in the planet. What he stresses is that there is not a distinction between organisms and environment, because both are interdependent, coproduce and have the same importance in the pursuit of the Planet functions. In this way, “*Agencies are redistributed*” (Latour, 2019, p. 76).

Latour continues: “The simplification introduced by Lovelock in the comprehension of terrestrial phenomena is not at all that he added ‘life’ to the Earth, or that he made the Earth a ‘living organism’, but, quite to the contrary, that he *stopped denying* that living beings were active participants in biochemical and geochemical phenomena. [...] He refuses to *de-animate* the planet by *removing most of the actors* that intervene all along a causal chain” (Latour, 2019, p. 76). Latour adds that it is not important to understand the whole theory by Lovelock, but just to the point that his new view of the Planet could beget a political shift, when we start to consider the natural sciences as encompassing all the activities necessary to our existence.

In other words, according to Latour, it is clear that what Lovelock describes has agency, and whatever action we take, these will have a consequence, be they good or bad. Things are inevitably going to react (physically, biogeochemically) to our actions. Ironically, Latour challenges the economists to still see nature as a source, however, he alerts that this would not be without consequences (Latour, 2019, p. 77).

¹⁷ The term used by Latour is after Edmund Husserl. It refers to the conception of the objects as “*external* to the social world and completely indifferent to human *concerns*” (Latour, 2017, p. 66-67)

Nonetheless, a change in the economical and political sphere would not suffice: Latour suggests a change must occur also within the social sphere, as it is necessary to shift away from our understanding of the social in a Marxist perspective, which is based on social classes and the system of production. Again, this is a mental scheme that enhances the distinctions between humans and non-humans. The new system that Latour suggests is a “new materialism imposed by the orientation toward the Terrestrial” (Latour, 2019, p. 61). However, this new materialism must follow as well a new definition of nature: the one that we hold now is still based on Western Scientific Rationalism, which sees non-humans as “contextual accessories” (Gleason, 2019, p. 983). Considered that politics require agents that bring interests and capacity for action, we must shift the perspective and start to consider that what we call non-human, are as valuable agents as we are, since we all belong to the Terrestrial.

I think it is also interesting to report what Latour has written about the role of scientists in this context. On the one hand, what is needed to understand the Planet better is science and reason; on the other hand, however, Latour sustains that the empirical sciences have to be both broadened and limited. In other words, he supports the curiosity of sciences and their openness to the exploration of nature as much as possible, but at the same time he thinks that sciences must be addressed to the study of things that are important for the present time (Latour, 2019, p. 78). Again, he serves himself of the distinction between those scientists that deal with nature-as-universe and those scientists that study nature-as-process: the firsts, study things that certainly concern planet Earth, but which can be observed just via intermediary tools, models and calculations. For normal people, these instruments are very hard to reach, and moreover, the data they provide, can often seem very uninteresting, when not extremely difficult to grasp. In some cases people just take the information as it is given (for example for black holes), but in other cases they manipulate the results or don't trust them (as in the case of data concerning vaccines, or

climate change) (Latour, 2019, p. 79). The study of nature-as-process, instead, according to Latour, takes a completely different approach, since the premises from which it departs are different. In particular, he affirms that for the second category of scientists, the reaction of the Earth to human actions is self-explicative. Their attention will focus quite instinctively into those parts of the ecosystems that have been endangered because of human action.

Latour continues by saying that a new methodology is required, to think differently about the relationships between the different agents on the Planet. This methodology is well summarized in three points by the biologist and social scientist Tristan Gleason: 1) we must seek a new authority in the principle of dependency, and start to consider different agents as capable of reacting to each other's actions. Other beings are not there just to satisfy the needs of human beings, but rather they are dependent on us and we are dependent on them; 2) Latour calls for new ways of being humans, new modes of existence on the Planet. Importantly, we should give up on the word humans and prefer the term terrestrials, or better, start to consider ourselves as part of a big whole, in which our actions produce consequences on other entities; 3) terrestrials have to start to think on a more processual basis, on the becoming of things, and consider that entities that have agency and bring interests are part of an ever-growing list (Gleason, 2019, p. 983).

Even though the world-view described by Bruno Latour is in some aspects cryptic, and in some cases the absence of strong examples to his arguments results a bit too generalist, I think that his framework provides us with some key concepts useful to read the case of artistic research that I am analyzing. Therefore, I shall now link this introduction into the Latourian line of thought with the Zoöp methodology and the *DataFusion Instrument*. Bruno Latour was, indeed, one of the contemporary thinkers whose theory inspired the design of the Dutch pavilion at the Triennale 2022. For the purpose of this research, there

are at least three aspects of Latour's view that make us better understand the choices made by the curators and the artists of the Dutch pavilion.

First of all, I remind the reader, that the key element of the Zoöp methodology is to integrate non-human entities into the decision making process. Even if I did not mention it explicitly before, this implies that the model is seeking to recognize that non-human entities have agency. As I say on page 50: "the Zoöp translates into the commitment of giving a legal voice to the other-than-human entities, in order to make them acknowledged by the human society, and to practice a form of collaboration within a multispecies ecological community". Following Latour, it is fundamental to begin to think about our species as dependent from other species, together with the interactions that take place in the environment, and the Zoöp methodology found a starting point within the legal framework.

Secondly, the *DataFusion Instrument* can be read as an attempt to consider nature as a process, rather than nature as a universe. Indeed, in the description of the *DataFusion Instrument*, the word "nature" was barely mentioned, and the people I spoke to, themselves, never referred to their data collection as to a study on "nature". This is coherent with Latour's invitation to think about ourselves and the other entities in the world as interconnected and dependent from each other. In this context, the term "nature" is not suitable. Moreover, Latour raised a problem related to the study of nature as a universe, namely that of the production and dissipation of data, as he considered them either uninteresting or difficult to grasp. The *DataFusion Instrument*, instead, collects the data, and gives them a different asset, to allow a fruition which does not require particular previous knowledge to be analyzed. Even if those data do not give us much information on single entities, the *DataFusion Instrument* encompasses the sense of a whole of movements, sounds, images, interacting together and happening at the same time. Perhaps, in this way, the data are made more interesting.

Thirdly, I argue that the *DataFusion Instrument* suits well the three points summarized by Gleason, for a new methodological approach to consider the relationships between the so-called Terrestrials. As for the first point (we must seek a new authority in the principle of dependency, and start to consider different agents as capable of reacting to each other's actions), however, I think much has already been said. As for the second point, instead, I think that the ArtScience students sought "new ways of being humans" through the "Participatory Rituals"¹⁸, as they trained their senses in order to learn how to perceive other entities and to get into contact with them. Importantly, they could feel entities that they normally would not have taken in consideration, thus feeling themselves as part of the whole, and more like Terrestrials.

Finally, as for the last point ("Terrestrials have to start to think on a more processual basis"), the *DataFusion Instrument* is overtly an unfinished project. The instrument has been indeed designed in order to fit different places, and to work over different time scales. That is, not only it could be suitable to a far distant place, but also to the same place in a couple of years: it is not clear of what could happen because of variations on temperatures, for instance, being them global or local. Moreover, even if the sensors were able to collect a huge amount of data, the artists agreed that there is a lot more to be observed.

The *DataFusion Instrument* as seen through multidisciplinary lenses: the art historical perspective

After having considered the *DataFusion Instrument* under an ecological perspective, and under an anthropological one, let us look at this artifact through another lens: the one provided by art history. As the main focus of my research is the artistic practice, in this section I consider how the *DataFusion Instrument*, and in particular the piece

¹⁸ The slow walks through the park, in which they tried to sense all the elements surrounding them.

“Transparent Archive”, can be framed in comparison to other similar results of contemporary artistic practices. More specifically, I firstly define what an archive is and what role it plays within a society or community. Secondly, I consider how the archive has been reconsidered in contemporary art and how artists approach to this tool and for what reasons. Finally, I ask whether the “Transparent Archive” can be considered an archive as such, and if it does have a role in the creation of new narratives around the objects it collects.

Because of its transitional character, it is difficult to define the origin of the archive. Historian of science Hans-Jörg Rheinberger (1997) compares it to the forward of a book, namely an afterthought, something that has been constructed after a reflection. At the same time, archives are often made out of random materials, that one ends up finding in one’s hands, so to speak. To create an archive from random material, means trying “to create a systematic knowledge out of fragments” (Arends, 2019, p. 59). Importantly, archives are a process, always updated and put in relation to other objects, from the same archive or another archive, or any other type of object. Archives also express the human fear of losing things, of losing some piece of information concerning our reality, or our past: we do know that archives are precarious and can be easily lost or get ruined (e.g. by a fire), but we also recognize their value as spaces for learning and perhaps as inspirations to create new knowledge (Trends, 2019, p. 59). The art historian Krzysztof Pomian defines an archive as “a set of natural or artificial objects, kept temporarily or permanently out of the economic circuit, afforded special protection in enclosed places adapted specifically for that purpose and put on display” (Pomian, 1990, p. 10). Also, according to Pomian, the objects composing an archive have been taken out of the economic cycle and decontextualized in a different system of values. In other words, the objects in an archive change their nature: once stored, from objects they turn into accessible documents. The limits of the archive are defined by the objects that itself

contains, and at the same time it is barely impossible to have a finite archive, as it can possibly be always expanded. For this reason, it is difficult to say that an archive has margins (Arends, 2019, p. 61). It has, moreover, a “fragile and indisciplined” (p. 61) character, thus it does contain knowledge, but never in a definitive way.

According to performance theorist Rebecca Schneider (2012), archives are a methodology used within western culture: on the one hand, we use it to understand our past by looking at its remains and, and on the other hand, we use it to institutionalize and maintain what has been lost. Moreover, according to the art historians Nora Almeida and Jen Hoyer, within an archive new imaginative possibilities can emerge, that in some cases can even produce socio-political and ecological change. The concept of archive derives from the terminology of history, where the archives are conceived of as monuments, which allow us to reconstruct history (Almeida & Hoyer, 2019, p. 13).

However, interestingly, the historian Adriana Cracuin (2014, p. 2) notices that archives are changing in their arrangements, and we are lacking proper definitions, and precedents to categorize them (Arends, 2019, p. 62). This observation is interesting for the case study of this research, as contemporary artists can be pointed out as the very initiators of the changes occurring in the nature of the archives: in environmental art practices, especially, artists use the archive to address questions concerning the impacts of human beings on the Planet, and as a tool to frame the world differently. Taking this into consideration, in what follows I consider how artists use the archive in an artistic sense.

There are different interests that push artists to develop an archive: 1) to show “lost or displaced historical information, alternative knowledge or counter memory” (Arends, 2019, p. 75); 2) to propose a different way to read a consolidated piece of knowledge (with a provocative attitude); 3) to make relationships between materials and their qualities emerge; 4) to credit themselves with originality and artistic creativity (Foster, 2004, p. 6). Interestingly, artistic archives are often simultaneously found archives and constructed

archives, factual as well as fictive, public and private, (apparently) illogically arranged, and yet presented in a way that to our eyes seem to have sense (Foster, 2004, p. 4-5). Art historian and curator Mark Godfrey also suggests that artists approach to archival activity both as archivists and as historians (Godfrey, 2007, p. 141). That is, they operate as archivists in the sense that they are pushed by the willingness to collect things, and as historians as they also want to systematize those things to produce some knowledge. Arends sustains that archives “hold fragments of the world and of its history”, and artists engage with them by interpreting, comparing and transforming these fragments (Arends, 2019, p. 83). Nonetheless, in this very conception of the archives as a sort of monuments lay some problematic aspects of archives: firstly, archives in Western culture are mostly uniformed, and thus reject the way in which different communities have collected objects and recorded their history (Almeida & Hoyer, 2019, p. 13 and p. 15). Secondly, even if archives are often declared as “neutral”, actually they always carry political values. It is naïf to think of archives as neutral, as well as to conceive of them as mere static holders of the past. There is nothing static in an archive; on the contrary, archives can play an important role for the present and the future: the act of collecting different narratives, allows to deconstruct and reconstruct archives that eventually can suggest new critical reflections on the social and political sphere, and thus create space for new opportunities for the collective future. Thirdly, as mentioned above, archives can be manipulated for specific purposes, and thus we have learned to take them cautiously: as the archivist Terry Cook (2000) suggests, when approaching to an archive, it is important to think about it as a process rather than a product, as something in becoming, never static, but instead, always dynamic: describing a context and referring to a time and a place, an archive is never an universal absolute (Arends, 2019, p. 62).

Because of the above-mentioned issues, scholars felt the need to developed a broadened conception of the archive, in order to challenge canonical interpretations and

seek to delve into history with new perspectives. For this reason, especially in the context of artistic practices, we are witnessing a shift from the historical archive to archives conceived of as a fertile field for activism, which artists exploit as a space to make their work circulate outside the canonical exhibition spaces and markets for contemporary art (Arends, 2019, p. 65).

In the engagement with the archive in an artistic sense, artists see in the archival material “an experimental field for the interrelations between materials, human and non-human agency” (Arends, 2019, p 67). For instance, the art historian Petra Lange-Berndt (2015) explores the approaches of artists to material and materiality, and categorizes them into socio-political power relations and natural and post-natural.

In this respect, the anthropologist Tim Ingold (2012) gives a definition of materiality as something “considered in respect of its occurrence in processes of flow and transformation” and suggests that to understand materials means “to be able to tell their histories” (Ingold, 2012, pp. 343-345).

Now that I have clarified that the concept of artistic archive goes well beyond the traditional, institutional conception of the archival tool, I would like to look at two approaches that the artists adopt to set up their archives: the montage, and what the art historians Nora Almeida and Jen Hoyer call the “living archive” (Almeida & Hoyer, 2019).

As for the first approach, the montage, according to Arends, this is to be understood as a process of putting together ready-made products and give them a new form. Artists use montage as a framework for the comparison between the images and objects that they are collecting, and thus analyze the divergencies and the similarities between the present and the past. Perhaps, those objects could apparently be unconnected to each other: the montage is indeed useful to create new paths of associations between them. “The life of a fragment can thus become part of an open and heterogeneous structure as opposed to a closed, centred and unified structure” (Arends, 2019, p. 83). According to Arends,

furthermore, the montage can be used as a creative way to organize the modern world, that uses a technique that has a certain tradition (for instance, in literature or in music), but at the same time leaves space for the development of new ideas, and the overlapping of conceptual fields (Arends, 2019, p. 84). Some prominently famous artistic archives are the *atlas* by Aby Warburg (*Mnemosyne Atlas*, 1924–1929) and the more recent *Atlas* (1962–ongoing) by Gerhard Richter¹⁹.

As for the second approach, the “living archive”, according to Almeida and Hoyer, this presents itself as an attempt to create an alternative type of archive: they think that the “living archive” is a type of collection that is inclusive, always on the making, and where the archivists are always “active participant(s)”. This kind of archive is flexible and can be adopted in different infrastructures (Almeida & Hoyer, 2019, p.18). Moreover, they suggest that the living archive also possesses affective relationship with the things collected (it relates to how we have experienced and how we have performed those objects). This connection with the emotional sphere is also important for the re-thinking of the cultural and political values of communities. In this sense, thus, the living archive avoids creating narratives of “us and them”, and prefers to convey the fact that both institutional narratives and traditional ones have equal weight and dignity. Perhaps, the living archive can “inspire new economic, political, and social relationships to the diverse” (where “diverse” refers to both human and non-human beings) (Almeida & Hoyer, 2019, p. 20).

Let us finally look at how the above views on archives can illuminate the case-study of this research. The “Trasparent Archive” exhibited at Triennale 2022, and described here under the paragraph *DataFusion Instrument* on page 51, consists of a transparent box with eight drawers, each one containing some objects collected in the garden of Het Nieuwe Instiuit: some are samples of the ground (sand, soil), some are natural objects

¹⁹ Gerhard Richter’s *Atlas* is available at his website: <https://gerhard-richter.com/it/art/atlas> (last access 17/02/2023)

from the garden (leaves, flowers), some others are things left by humans in the ground (garbage), others are photographs of mycelia or pollens collected by the students working on this artistic project.

This work, I suggest, can be identified as an archival artistic practice, as it shows both the feature of the montage and that of the living archive. More specifically, the transparent archive is a form of montage because it shows objects which would normally be considered obvious and taken for granted. On the contrary, by being exhibited within a box in an artistic context, invite the visitor to stop and look at them; while doing so, the visitor is put in a position from which s/he can come up with new interpretations of these objects. The meaning of the exhibited objects is thus re-contextualized and changed.

Furthermore, it show also the features of the living archive because: 1) it is an on going process: in the interviews Kluitenberg and Delso affirmed that the project they have presented is not a definitive one, since there is much work left to be done, especially because the site changes very quickly; 2) archivists are active participants of the collection: the very first phase of the development of the *DataFusion Instrument* was named, indeed, “collecting”; artists deliberately decided what objects to collect and which to expose; 3) it has a flexible character and can be adapted to different contexts: the *DataFusion Instrument*, as already explained in the second chapter, has been designed to work for different spaces and time; 4) the artists developed an affective relationships with the objects they themselves collected: especially by the means of the “Participatory Rituals”, in which the body of the artists became the sensor for the collection of data of the garden, the artists affirmed that their relationship with what they were observing changed. As they were invited to use their senses to listen to the entities in the garden, the perception of those entities was more direct, and not filtered by an anthropogenic instrument.

To conclude, I rely on Arends to reflect on the association between sciences and archives in contemporary art: the author points out that between the 60s and 70s, artists started to engage more and more with archives, as well as with the study of the natural sciences. The collection of natural materials into sorts of archives was thus quite spontaneous (Arends, 2019, p. 68). The sampling of things, objects, pieces of the natural world is of course a quite common practice in the natural sciences, as it is used to reconstruct the succession of events, such as geological processes, the variability of climate in history, the history of evolution, etc. (Arends, 2019, p. 71). Thus, archives are also key tools to better frame human cultural history in time and space (Arends, 2019, p. 70). From this considerations, I suggest that artists who deal with themes close to the natural sciences can find in the archive an effective tool for articulating (and then display) their ideas. This led me to the conclusion that this explains, perhaps, why the artists involved in the *DataFusion Instrument* project chose to approach to the study of the garden starting from the collection of a huge amount of data, and its consequent storage and presentation, which is a quite similar approach for the assemblage of an archive: data were collected and stored in the website, in order to be accessible for everybody; in the “Capsule”, in order to be experienced by everybody; and in the “Transparent Archive”, to provide a visual synthesis of the collection.

Is the *DataFusion Instrument* an example of research art?

At this point, I should have provided the reader with an overview on the *DataFusion Instrument*, which, if not complete, should at least be quite detailed: I read the work in an ecological perspective, I put it in relationship to Bruno Latour’s contemporary ecological theory, and I framed it within the contemporary art historical context.

What is missing, is the answer to the core question of this thesis: can the case-study presented, the *DataFusion Instrument*, be considered an example of research art? And

does it convey any form of knowledge? To seek an answer to this question, in this last section, I go back to the arguments introduced in the first chapter of this thesis.

In the first chapter, I remind the reader, I looked at definitions of the concept of artistic research. Among all the points made by different scholars, just some, I think, suit the *DataFusion Instrument*. The first is one of the three definitions of artistic research provided by Borgdorff (2012), namely what he called “research in the art”: with this term he refers to all the research which is required for the process of artistic production. Within the *DataFusion Instrument* project, artists have been involved in at least two types of preliminary research: on the one hand, they looked at some literature on modern ecological thinking (as I explained above, they read theorists such as Bruno Latour, James Lovelock, Lynn Margulis, etc.), and on alternative contemporary artistic practices (especially on the connection between sound and meditation, theorized by Paulina Oliveros²⁰); on the other hand, the collection of data from the garden of Het Nieuwe Instituut is itself a research process, as the artists first approached the garden knowing very little about it, and ended up being with a significant amount of expertise about the garden.

The second definition of research art that fits the *DataFusion Instrument* well is that given by Soren Kjörup (2010). According to him, an artist who does research has to be both an “inquisitive analyst” and a “creative maker” (Kjörup, 2010, p.26). Both of these qualities can be found in the *DataFusion Instrument*, respectively, in the collection of the data and in the final design of the project. The artists, indeed, curiously approached the study of the garden, and meticulously harvested a big amount of information. Furthermore, they have been able to re-organize the data, in a way which is accessible, readable, and experienceable, and which is different from traditional ways of accessing scientific data and, perhaps, more straight forward.

²⁰ More information on the literature consulted by the artists can be found in the interviews to Delso and Kluitenberg, as well as Andrzej Konieczny and Christine Groenborg (see Appendix I)

The last point relates to the last position that I want to recall, Scrivener's (2009). He claims that one type of research art, "research through art", sees art itself as a method to understand things. In the *DataFusion Instrument*, art is the fundamental premise departing from which the artists approached the study of the garden. In particular, I rely on what Rodrigo Delso stressed in our interview: according to him, the development and practice of the "Participatory Rituals" have been a moment of complete detachment from the scientific domain. Here, the group used methods from the artistic field to do something, which is traditionally associated to scientific practices, namely data collection. Following some instruction that permitted them to focus on the environment and especially on its sounds, the artists made an extremely slow walk through the garden. By becoming more aware about the context in which they were, they sought to perceive it more consciously, and thus capture more data by using their senses, without the aid of man-made instruments. The "Participatory Rituals", thus, helped the group to learn more about the entities they were studying via an artistic practice.

The second section of the first chapter is dedicated to the relationship between artistic research and more traditional, academic forms of research. In reaction to this, it is interesting to consider that the *DataFusion Instrument project* gave birth to a "multidisciplinary cooperation", to use Borgdorff's words. By multidisciplinary cooperation, he intends the combination of methodologies and practices coming from different disciplines. In the *DataFusion Instrument*, artistic and scientific disciplines enhanced each other, as on the one hand the scientific tools and reading methods used during the data collection were crucial for a good understanding of the site, and on the other hand, the final presentation of the data was meant to be accessible to a wider public, and thus "useful to disclose scientific concepts which normally are hard to grasp" (Borgdorff, 2010, pag. 53): the immersive multi-sensorial experience of the "Capsule" and the design object called "Transparent Archive" were meant exactly for this purpose.

Moreover, I think it is interesting to look at the *DataFusion Instrument* as at a tool to see the things of the world under a different light, in the way proposed by Gerard Vilar (2018). As suggested by Eric Kluitenberg in our interview, we can consider that the *DataFusion Instrument* provides the visitor with two types of fruition, one analytical and one experiential. On the one hand, data are exhibited with an analytical purpose, expressed in the “Transparent Archive”: here, as I maintained in the previous section, objects are re-contextualized in order for them to gain a new level of significance. Objects that we would normally not take into consideration are exposed, to be looked at and analyzed by the visitors. On the other hand, data are transformed into sound and images inside the “Capsule”, in order to be experienced by the visitor. In other words, raw, “cold” data change their form to become something else, something that can be learned through our senses. These two strategies propose a new, creative way to read the everyday world.

One further aspect of artistic research, if we maintain that research is meant to provide knowledge to people, and which I address in the first chapter, is related to the question of cognition, that is: can art convey knowledge? Does the *DataFusion Instrument* convey knowledge? And does it convey a knowledge which is sharable with a broad public? In what follows, I shall consider these two issues in turn.

To begin, I believe it can be claimed that the *DataFusion Instrument* itself provided us with new notions. Indeed, as explained throughout this work, the *DataFusion Instrument* seeks to make the watcher understand that a site/environment/ecosystem is composed by many parts that interact with each other, and that we should take all those parts into consideration, which is something that normally we do not do. Indeed, attention towards the non-human sphere is still not well interiorized by human beings (especially in Western societies).

In the first chapter, I looked at proposals put forward by two philosophers, John Gibson and Vid Simoniti, to discuss the link between art and knowledge; in what follows I try to use them to read the *DataFusion Instrument*.

Following John Gibson (2008), the *DataFusion Instrument* can be read through two out of three approaches that he proposed, namely by considering art as providing both “philosophical knowledge” and “experiential knowledge”. The first approach suggests that artworks invite the visitors to reflect on something, or better, to extract a teaching out of a representation. The second approach, instead, maintains that art products can provide us with an experience of the world, that otherwise we would hardly or never be able to have. These two approaches connect with the remarks by Vilar mentioned above: the analytical part of the project, the “Transparent Archive”, allows us to see that a garden (in the *DataFusion Instrument* case it is the Het Nieuwe Instituut garden, but the methodology of the project can actually be applied to all gardens) is composed of various layers. The single parts of each layer, alone, do not mean much, but a garden only exists if all of these parts exist. The drawers are meant to analyze each layer, and the transparency is meant to convey the simultaneous coexistence of each element (fig. 7). As for the “Capsule”, which expresses the experiential part of the *DataFusion Instrument*, it allows the visitor to get a sense of non-human life in a garden. Moreover, the very act of putting one’s head inside a hole in order to enjoy the show, should be read as suggesting that one is enjoying an opportunity to be part of the whole that is experienced through the installation: one is both part of a movement of sound and images, and a member of the public enjoying those sounds and images. The forms of life documented by the installation would have normally be presented as mere objects of numerical and graphic representations, but the artists designed a creative and immersive way to make information about them, and thus, provided the visitor with an experience that would not have been possible without their artistic mediation.

Following Vid Simoniti (2022), we can seek to answer the second question, namely whether the *DataFusion Instrument* is capable to get broad audiences familiar with the topics he deals with, which are still not well received by society at large, and whether the work allows for a temporary suspension of judgement on the issues it tackles, encouraging the public to ponder the often contradictory aspects of those issues, rather than to advocate a specific position. I shall now better explain these two points with some examples.

As for the first point, it is first of all important to understand Simoniti's position with respect to ecological art: he is skeptical towards the traditional conception of ecological art as useful to create empathy with nature, and consequently reshaping the viewer's relationship with the natural environment. According to many scholars, indeed, ecological art has the power to emotionally connect the viewer with the Earth, as images lead to mental paths, which eventually bring to concrete actions (contrary to scientific data, which are usually not suitable to arouse emotions in a broad public). Simoniti, instead, advances a different theory: art is not at its best when it advocates for certain causes explicitly (such as when ecological art seeks to strengthen our connection to the natural world), but it can work extremely well in the service of a cause when it seeks to prefigure a desirable future. He takes for instance David Hockney's painting *Peter getting out of Nick's pool* (1967) (fig.8): this work shows the back of a naked man getting out of a pool. It is clear that the depicted person and the owner of the pool are in a homosexual relationship, which in 1967 was not at all as normalized as it is nowadays. What Simoniti suggests is that here art gave a sort of prefiguration of a social change, it somehow predicted that, in a desirable future, homosexual relationships would have been none of a scandal. Thus, art can seek to organize our experience of the world differently, and challenge the way we look at what we consider as "normal". Simoniti then takes a step further: if it is art that creates a new sensibility, it is the voice of mass culture that has the

role to spread it. Once people interiorize an issue, they start to ask for a change, and sometimes significant change is achieved, and laws are written and applied. According to Simoniti, much ecological art is however hardly like Hockney's painting: for what concerns the environment, the works produced by several artists do not seem effective in triggering our sensitivity and in some cases they can even be misleading. Indeed, we are always fascinated by the natural environment and consequently by its artistic representation but, although the sense of emergency for the environmental crisis is widespread, we have not yet interiorized the awareness of the impact that our everyday activities produce on the environment. So, when ecological artworks represent our devastating impact on the environment, seeking to arouse our indignation, they often miss the point. Simoniti admits that it is difficult to predict whether and when a much-needed cultural shift in the way we look at the environment and take responsibility for it will happen, however he notices that art, in this context, should start re-thinking the subjects of its representations: from the glorification of nature, to more mundane images. In other words, Simoniti is suggesting that, instead of glorifying nature through images, or cry over its devastation, art should rather start to represent the benefits that nature provides to our everyday experience of the world, make us familiarize with them, and thus, perhaps, change our relationship with nature. Indeed, this is similar to what Hockney did with *Peter getting out of Nick's pool*: in the 60s, he presented a desirable future, where a homosexual couple could spend their day without preoccupations. In this way, art could help us to familiarize with the idea that we can relate to nature differently. Perhaps, the role of contemporary art with socio-political ambitions is that of picturing future situations that we have not yet interiorized, rather than that of spreading moralistic, much-repeated messages.

I shall now link Simoniti remarks to what Ania Molenda told me in our interview: the whole design of the Dutch pavilion at the Milan Triennale conveys a speculative idea. The design

is here used as a tool to prefigure possible ways to look at the world, hoping that the will becomes common soon. The more tangible the results of the project are, the more the speculative design will be effective. For instance, the figure of the Speaker for the Living, for now, has been designated just for Het Nieuwe Instituut, whereas the other two sites examined in the pavilion (a drilling platform in the North Sea, a regenerative farm in Bodemzicht), still do not have one. However, the example of Het Nieuwe Instituut can at least give hope that their Speaker for the Living will be soon, eventually, designated.

The second issue that we have to consider with respect to the *DataFusion Instrument* is whether it is able to temporarily suspend our judgment and put us, the viewers, in front of the contradictions of the environmental crisis. Simoniti observes that much ecological art takes either the form of objective research or that of activism. The first approach tends to renounce to the peculiar effectiveness of artworks in conveying a view very straightforwardly, preferring to adopt an almost-scientific attitude, and thus losing art's vantage over the natural sciences. The second approach, i.e., to present a work of art that explicitly engages in ecological activism, is quite counterproductive, as it tends to foster political polarization: activist art tends to be appreciated by those who already agree with the artist, whereas it is usually dodged by those who are instead skeptical about environmental activism. In this way the field of discussion, *de facto* never opens up. It becomes a one-way dialogue, another way to "preach to the choir", that alimnts the division between the group of the activists advancing moral teachings, and those who are still not convinced. This is in fact a static situation.

Simoniti thinks that a different type of approach would be more efficient for the future of ecological art: rather than advancing moral instances, ecological art should concentrate on making emerge the complexity of the environmental problems and all of the contradictions of our views about the environment. I shall now provide as an example of this way of making politically-concerned art a classic novel by Mikhail Bulgakov: *Heart of*

a Dog (1925). This short story tells us about a stray dog that is taken from the street to the sumptuous house of the doctor Filipp Filippovich Preobrazhensky. In the first pages, the reader gets to know the poor context in which the dog has been surviving so far. When it is then brought by the doctor into his house, the dog starts to learn about the comforts of the bourgeoisie living standards, and gets quickly used to them. The book was written in the 1920s, in the Soviet Union. At that time, the country was experiencing the so-called NEP (New Economic Politics), initiated by Lenin after the failure of the complete centralization of economics under the Soviet regime. In the book, I believe, Bulgakov makes emerge the contradictions of the application of the NEP. One scene in particular made a strong impression on me: Filipp Filippovich lives in a flat in a residential building, which is composed of seven rooms (the kitchen, the bathroom, the dining room, his studio where he receives his patients, three bedrooms – for him, his assistant and the housekeeper), whereas the other residents of the building only possess one or maximum two private rooms. Evidently, the economical position of Filippovich allows him to maintain seven rooms, however the soviet inspector responsible for the building, at one point of the novel, comes to Filippovich's place to ask him to reduce his rooms from seven to four, which would be already a privileged treatment. The doctor replies that he needs all the rooms that he has, and supports his claims with valid motivations. When I was reading this passage, I felt sympathetic towards Filipp Filippovich, because I agree that people have the right to live in a large house, that allows to conduct different activities in different rooms. On the other hand, however, I also felt bad for the other residents of the fictional building, who either for necessity or for faith in the party, agreed to sacrifice their possessions. Furthermore, as the doctor manages to send away the inspector without losing his rooms, by just calling on the phone a friend of his (who is perhaps in the high ranges of the government), I felt really conflicted towards the doctor: didn't he abuse of his powers in calling his friend?

I think that Bulgakov neither takes the side with Filipp Filippovich, nor with the proletarians, but rather reports in the book the historical frame as it is, with all its contradictions: he leaves the readers free to draw their conclusions. The way in which the story is narrated, then, allows to ponder the state of Russian politics and economy in the 1920s in a more empathic way: getting to know the characters of the novel, and perhaps identifying ourselves with them, or at least understanding their feelings, is surely more engaging than a three-hundred-pages essay about the historical analysis of the economic situation in Russia during the 20s!

I agree with Simoniti when he suggests that maybe ecological art should start to ponder more about the subjects that it represents. If artworks prepared the field for the public to reflect on certain issues, just like *Heart of a Dog* does, casting light on all the various facets of those issues, then the public would perhaps be more available to engage in critical reflection.

Going back to the case study of this thesis, I think that the *DataFusion Instrument* failed to trigger the public to ponder the issues it tackled, because of the afore-mentioned problem of being too much of an objectivity-driven work: the *DataFusion Instrument* is mostly focused on reporting data. Even if they take a different form than that of scientific studies, the works presented to exhibit the *DataFusion Instrument* do not put forward message straightforwardly, as they require the viewer to read the exhibition texts in order to grasp fully what they want to convey²¹. In other words, the viewer is put in front of the fact that we, the human species, are interconnected with all the other species and the environment in which we move, and we directly affect each other. This is presented in the exhibition as a fact, and the viewer is not offered any path to get familiar with this fact, which is rather presented as something that we must interiorize, period.

²¹ I personally helped with the drafting, editing, and translations of the texts, and I witnessed many changing, simplifications, modifications, as the terminology required on the one hand to be specific, in order to avoid banalizations of the work, and on the other hand to be accessible and comprehensible to everybody.

The last point I would like to make concerns the fact that, perhaps, the *DataFusion Instrument* succeeded in getting at least the artists who worked on it to interiorize the view that human beings are interconnected with the other species. As they had to approach the study of the non-human by means of different methodologies, which were all human-made inventions, the artists felt the need to distance themselves from their methodologies, in order to really get into contact with the non-human. They were put in front of a contradiction: they had to learn that the human species is just as important as other species, but to do that they were required to use anthropogenic instruments, putting themselves in a higher position compared to that occupied by the other entities they were studying. To contrast this, they developed the “Participatory Rituals”. Their goal was to learn how to enhance their senses, so that their bodies could become a sensor for non-human entities, without the aid of anthropogenic instruments. In this way, they could feel the environment around them, as well as the creatures that are part of it, and integrate themselves with this whole.

Conclusions

In this thesis, I have tried to frame the concept of artistic research within environmental art. For this purpose, I analyzed a case study, the artwork *DataFusion Instrument*, presented in 2022 by a group of students from the ArtScience Interfaculty of The Hague within the Dutch Pavilion *Have we met? Humans and non-humans on common ground* at the 23rd Milano Triennale.

In the first chapter, I looked at various definitions of the concept of artistic research. Interestingly, this is not to be thought of as a notion that can be applied just in the context of contemporary art, as it can be used, in general, to refer to the work that artists or manufacturers conduct before, during, and after making an artwork. For instance, the simple fact of needing to choose which materials to use (wooden or paper canvases, oils or watercolors, marble or wax, etc.), as well as which technique (drawing, painting, graphic design, etc.), requires the artists to get informed about the materials, and to learn how to master different techniques. Moreover, artists never create something out of nothing, but rather they always have to confront themselves with a long tradition: other artists who were active before them and sometime invented new techniques or approaches to art. To get to know about art history is mandatory for artists of all genres. This falls as well under the activities referred to as “artistic research”.

In the first chapter, I also tried to understand what makes it difficult for artistic research to enter the world of academic research, and the potentialities both forms of research could develop, if they integrated each other. The main obstacle, it seems to me, is that the knowledge-making path of art is very different from that of other disciplines, and constantly changing from work to work. However, I agree with Borgdorff that, as academia is opening up to new forms of knowledge production and communication, artistic research can brilliantly play its role in this new context (Borgdorff, 2010, p. 44).

Most of all, this can happen because art has the potential to bring us to think about the things of the world differently, by casting a new light on them (Vilar, 2018).

Before looking into the cognitive value of the *DataFusion Instrument*, however, it was necessary to get more precise informations on its making process. The second chapter provided this informations, which were then analyzed in the third chapter, where the multidisciplinary character of artistic research emerged. Connecting a plurality of disciplines is particularly important in the context of environmental art, as ecology teaches us that to study an ecosystem requires the expertise of many branches of the natural sciences, as well of the social sciences, since human culture shapes our attitudes towards the environment. Artists *do* need to do research, if they want to address ecological issues - arguably the most pressing issues of the present times.

My final assessment of the *DataFusion Instrument* is not entirely positive, as it seems to me that the work is somewhat difficult to access, since to understand how it is structured we need a significant amount of information and analysis. At the same time, however, from the interviews I conducted with the artists it emerged that the main target of the *DataFusion Instrument* project was to learn as much as possible about Het Nieuwe Instituut's garden, rather than to produce a well-rounded, fully developed artwork. A final comparison between the work conducted for the *DataFusion Instrument* and academic research can be illuminating. When the scientific material produced in the context of an academic research project is made public, it is usually material that a public of non-experts finds difficult to grasp, lacking the necessary expertise. For the broader public to have at least a partial understanding of scientific results, it is always necessary a form of mediation, with a language as clear and as direct as possible. I submit that the case of the *DataFusion Instrument* is not dissimilar to that of standard academic research: with this artwork, the artists presented the results of their research - a kind of research that was performed with non-conventional methodologies and instruments, admittedly. They

have not yet reached the communication phase of their research work, which should consist in the production of information that is easily accessible to the wider public. More precisely, limited efforts have been made in this direction, through the production of exhibition texts and other mainstream communication texts, such as articles on newspaper, magazines, and blogs.

Appendix I

Interviews

Online interview between Ania Molenda (assessor of Het Nieuwe Instituut building and garden) and the author, 15th December 2022

IT: How long have you been working with HNI and precisely on this project (*Have we met?*), but also in the development of Zoöp?

AM: I was not involved in that [Zoöp, nda] at the beginning, I followed the project from the sideline because my ex-boyfriend back then was involved in it before it was what it have become, but I was not involved in the early stages of it. I was invited to contribute to have. We met in the context of the Zoöp also as a kind of a lab, of work that I have been doing that started with the Dissident Garden and the work that I did for the Triennale in Milan, the previous. And that was connected to darkness, and also questions of light pollution and ecologies, but also how we are connected with different forms of lifecycles that are connected with the darkness, and how that influences us, humans, biodiversity and ecosystems at large. This was one way how I work, getting more entangled with the ecological questions and why I was also asked for this years' Triennale look more at the social and ecological entanglement because my work has never been 100% on the ecological, I think it always was more looking at the social and economical perspectives, and then somehow I was more and more engaged with the various ecological consequences of that.

IT: Indeed you also decided in the study of the zoonomic cycle to focus on mostly the social aspects

AM: I think in a large extent it is. Besides finding it extremely important, and having deep interests to understand more about it, I am by no means an ecologist or biologist, this is not my background, but also the approach that I have towards architecture in terms of practicing. What I preach (especially in the context of cities) is you don't have to be an expert to be knowledgeable about architecture and the city, and I think in a sense that also formed my approach to work the questions I receive. To assess does make me follow the conditions of HNI, because at the beginning the reaction was "how can I do this? I am not an expert" but then I thought "well, maybe I am, but in a different dimension in the things I don't know, I don't understand. Maybe is already valuable enough if I ask questions about that. Maybe is also enough if I find a person that knows more than me and try to get this knowledge as well". And in that sense, I think my research is very deeply rooted in the social, and then it tries to depart from there and also I think it was an exercise for me to look at where these connections can be formed, and also it was interesting for me to understand the organization as such and what the impact of the Zoop is on the organization, how the different people within the HNI perceived this and how they feel, they are a part of it or not.

IT: Did you also do the first Zoöconomic cycle or was it done by somebody else?

AM: No I think the very first was done internally, this document I received it from Klaas and Wietske, I am not sure who was actually involved in making this, but then it was interesting for me to see that, and see how could this be expand and how I could build upon it.

IT: When you saw this document, did you see some improvements, some kind of change?

AM: I think a lot changed, to the point that it was almost impossible to compare, because first of all the scale was different, since I was looking also at the museum park, which was completely not at all a part of that analysis. So the scope was different and of course everything around the new garden and the pond has changed. So there was a completely new situation in the making because a new design was implemented, so in that sense it was very unclear for me how to relate to what was there and what it was coming, because it was not fully in place yet, but I just took this moment of transition, without to judge what is good or bad, just understanding what was happening and what impact it might have.

IT: Now do you think something changed after your work?

AM: I think it is maybe early to say. What changed for sure is that now there is a Speaker for the Living that was not there yet; I knew they were going to introduce one, but I didn't know when this would have happen, who was going to be, how she was going to work, and this is again a new development. I think this is a really major one, because it is really a key role in that structure. So I think that that person is the one who can have influence and has the power to create insight for the assessment and translate this insight into actable policies, or requests for the actual organization or suggest how we should do things to do things or don't do at all.

IT: Was it you that made some suggestions for implementations?

AM: No, I did not know who the Speaker for the Living would have been so perhaps she made the suggestions. I made some suggestions as well but these suggestions were sources from the conversations I had with people at Het Nieuwe Instituut. So I tried to not too make many conclusions of my own; I was asked to make an assessment so there is a personal opinion out there about certain developments or the assessment of certain

relations that exist or do not exist; but in terms of proposals I tried to source as much as possible from the people, who create the Zoöp actually.

IT: Since in my thesis I am analyzing more the DFI, my question would be whether you collaborated with the students?

AM: Unfortunately not, because processes were happening in parallel, so it was not possible to exchange information. Everybody worked independently, which I think it was a bit of a pity from my perspective. The only part that I did manage to talk with and exchanged information (I cannot say we collaborated) was DearHunter. They were working on the mapping instruments that they did, they met with me and I give them a walk around HNI and I showed them everything that I found interesting and I sketched my perspective and shared with them what I know and what I learned in the process. To what I see, I think that they used much of that knowledge in the process. So I think it would have been interesting if we were able to share. Also it was quite interesting to me when I saw what they came up with, I had the feeling “oh, I wish I had that at the start of the assessment”, because it would have been a really helpful tool for me as an assessor to use, as I thought it was really productive. Because I thought that if somebody was going to do it, their job would have been a lot easier and would have been able to create a lot of more insights. And I think the same counts for the instrument developed by the students: if I were able to see what they were doing and what insights they were able to get, that would also have drove my research.

IT: I was thinking that the idea for the pavilion was to use the assessments that you made (you, Fiona and Sander) were the basis of the development of the other project

AM: Yes, but at the moment of creation it was already a speculative task. So they knew we were working, but our research was not finished. I think they were briefed, provided

with summaries of the directions we were taking, or insights we were sharing on the different kinds of review moments that we were making with Klaas, Wietske, Ellen and you; I think that was also shared with the groups that were working on the instruments. But I think the idea of all these things working together and in the exhibition as such conveys a speculative idea. This is a proposition, of how it could work. At the time of its creation it could have not been exploited that way, but I think it does make sense in the exhibit, proves the fact that the “speculation” is done in a skillful way. But it is also the role of speculative design, to show the probability of reality that is not there yet, but not too far from us that it becomes unbelievable but if you are able to make something believable and to some extent tangible, that does not exist yet, then you made a good speculative design.

IT: Have you ever worked as an architect?

AM: Yeah, I have worked as an architect for several years. The last time I worked for a architectural office was in 2013, afterwards I was working on competitions on different scale, but ever since then I mostly worked on research questions and everything related to presenting research (exhibition, writing, creating public programs, teaching, etc.)

IT: Are you still work in this project?

AM: I am now working on a different project, but it is also related to the zoöp, but it's a different project altogether. Let's say they partly addresses the same issues, but it is a different thing.

IT: I guess you cannot tell me what it is

AM: I can! The project is called the New Academy. It is a subsection of a larger project, aiming to create new ways of sharing knowledge that is necessary for creating a more

ecologically and socially just city. So it addresses, for instance, questions like: what is necessary to make the question of the climate crisis and ecological emergency as something that could be spoken about to all sections of society, from policy makers to inhabitants of the city, or maybe people not interested in those questions. It depends maybe in which strata of society you look into. This is an urgent matter(?) that not everybody feels as urgency or not everybody have enough space in their life to spend time on that urgency, so in that sense they are so close to each other (the project for the Triennale and this one). But I think that the Zoöp has a very clear organizational structure, and organizational goal (how to install certain frameworks for making political decisions within the institutions that deal with the same question). And I think that the project that I am working on now has more to do with forms of knowledge and with ways in which you can not only create awareness, but you can create forms of ownership to this topic. And this is recognizing forms of knowledge that are not always seen as knowledge and that concern both human and non-human knowledge. In that sense I am also using things that I learnt and found out in the research I did for the assessment, because it also made me deal with and think a lot about what forms of non-human knowledge are there and how to recognize them. This question of how to give a voice to forms of knowledge we do not necessarily understand or see is what they both have in common (she refers here to the two projects)

IT: Do you think your research has something that could be accessible also for a wider public or just for internal use?

AM: I think it should be accessible for the wider public, I don't think this. Is something purely of internal use. In a way, I would hope that this kind of assessments could be done more generally and I think making them open also allows others to learn from them. I don't think that in my research there are in particular really sensitive things that have to be

reduced for the sake of institutional integrity or things that could make the institute vulnerable in that sense, this could be always something to consider if that would be the case. But I think that transparency is also quite important here, and there is in general not enough transparency about the state of our environment, where the things come from and who is making decisions about that, and I think also because of that we feel more detached and disempowered. So I think making things open, even if it is a small step it still help to make a step forward. Forms of sharing knowledge, building knowledge and creating empowerment.

IT: Maybe you want to say something that you think is important but I didn't ask you about?

AM: Maybe an important thing to mention is that this kind of task (making such an assessment) is quite broad and open, I was not really being provided with guidelines or requirements or requests in that regard, it was really a carte blanche, more driven also by the curiosity of how I will approach it. But that also is quite a challenge, to define the limit of such work, because of course a part of that task is to show different forms of interdependence, and that means embracing certain complexities and also gather enough to be able to show something. That's quite a challenge to see where the limits of that complexity is and your own limit as a person making the assessment. Because you know, as a one person with a certain amount of time you cannot always cover as much.

Online interview between Rodrigo Delso, Eric Kluitenberg (supervisors of the DataFusion Instrument research group) and the author, 16th December 2022

IT: How did you organize the work? Did you decide according to your personal interests?

RD: Well the idea, the starting point of the project, please Eric correct me if I am wrong, was to try to map or try to research on the biggest amount of layers we could imagine on this garden. So the collective approach on this project, and the work we made with the group was that everyone would bring their own and different skills to design different layers. So we would take advantage of the diversity of the ArtScience program students. So they can bring new ideas with the technology to capture these layers they want to look in the garden, and then the collective work would be to put that together, and produce the expression of that data. So basically the capturing was individual (but we reached each other a lot and talked a lot in weekly meetings about it), the rest, like preparing the objects and the outputs in the website is mostly a collective work, of course. For example in the production for the Triennale, most of the students was working on three objects in the website, but they will be in charged to finalize just one of those. So we separated in three teams and the three projects were not organized for being individual, everyone did something: maybe for one project you could be the coordinator, but you will also participate in the others as a co-worker. Everyone was somehow involved in the all preparation. So we tried to have a dynamic in which everyone had a part with different time commitments.

EK: In terms of the process, I think you can (but we didn't formalized that entirely) it can be distinguished three kinds of phases or three kinds of layers if you want, because a lot of this happened simultaneously. The first one is the real obvious capturing of data with all of these different sensors. As Rodrigo explained different researchers (let's call them) brought in different interests and skills and let them concentrate in one things rather than another (one was concentrating on water, the other on air, one soil and mycelia, but there

were also interest in the auditory environment. Rodrigo was observing with thermal camera, etcetera etcetera). We can summarize that as data capturing. And then the second thing that happened there, a little bit later of course, is that all the things that we captured had to be translated into something, in order to be presented first of all at this exhibition, but also could somehow communicate something on what was done or so, at least what we were asking. This translation part is quite important, and I also a part where specific design and artistic skills are useful, become into play quite naturally and are really useful. And the great thing about the team is that the background, was very different for everybody (Rodrigo is an architect, there is a girl who comes from interior design architecture, another one from the art and technology movement, another one is a designer who went into how we can experience space that is a big thing, another one comes from the performing art but has a scientific background as training, another one is a composer, who obviously put a lot of attention on music, but also created large participatory music events where the audience becomes active, and therefore there was a lot of attention to that. And then the third layer that comes in there is interpretation. So data capture, translation and interpretation. That's not a linear process (all things integrate in each other). So when we had some results, some first visualization, some first data that were captured, some first sound recordings, thermal images, etc.; and we did also collective event in the garden, where students developed participatory rituals to move through that space. One was an extremely slow walk through the garden. So in this very small garden it would take you more than half an hour to cross, just to become aware of that environment. So then we interpreted: "what does that actually mean?" And from whatever we sort of intermittently conclude, that starts to fit the methodology again, so right back to the begin process of the capturing. Cause then you might be more attentive to different things, like we might catch that and that

IT: So this capturing part, was it that you were just looking at the sensors or which other tools were used for that, maybe some experts were called

EK: No, I think there was a very broad range. Rodrigo already explained: even in the data capturing itself there was a huge amount of data points. How many were there in total, you said that in the presentation?

RD: At some point 48

IT: 48 sensors?

RD: Yeah, some sensors have more than one data that they can capture, but there were 48 points of data

EK: Yeah, so then in a regular scientific research you would immediately say “ah, that is just impossible to handle, is too many data points”. So what real formal significant correlation would (could) be established among them? But Beyond that, there were also things done like capturing sound, you simply move through the garden and record sound: what does that deliver? But we went also one step further by saying we use our bodies as sensors, so we are not only looking at data and recordings, and so on, no, we are *also* looking at, “ok when we are moving in the space, how do we experience that space?” At that point, it becomes more subjective, and move entirely away from the domain of the scientific, and that becomes even stronger when you start developing this kind of participatory rituals. Moving in a group too, in the space, you have again a different experience than when you are doing it individually or with two people, etc.. All of this modality have been tested, and this was really an experimental attitude, that is really important. And the point about experiment in the art science keep to bang on about this, because it is such a fundamental point, where we try to locate ourselves. If you do a proper experiment, a real experiment, which happens less and less also in the scientific context, then you really don’t know what will come out. You have maybe some hunch, like “this might be interesting, that might deliver something”. If you do it right, you do the

experiment first, and then almost in this Latourian sense (you know Latour, the science philosopher), you start to trace. So we did the experiment, now we had to trace, right? What happened there? And then on the basis of what it started to come up with first ideas: *it might be this* and you do further experiments, etcetera, and then there is this iterative process, a cycle again. So with all these subjective stuff, we had literally no clue of what would have that delivered.

IT: So you start from something you don't really know and then in the process you start to learn it, which it is a bit the contrary of what happens in scientific research: usually they do an hypothesis, and then come up in general terms and then in this case is quite contrary

EK: Yeah, the problem with that is that it limits very much the possibility of finding something that you didn't expect. And the same goes if you take another divide, that is very traditional, that we completely ignored, which is the divide of modern art field: between applied and autonomous, or applied and free. In the traditional divide, we could say that those students who really come from an art background they were all master students they had all practices already completed the bachelor in the art of another field, you could say that they are very autonomous like the composer etc., and then Rodrigo, the designer people they are applied, right? You could make that traditional divide. But that is totally not how we worked and we totally ignored, correct me if I'm wrong Rodrigo, as we see us: we see us as neither as autonomous nor as applied, but much more as researchers driven by interests and curiosity. And then you start to draw a whole kinds of possibilities, and bring that together to see if it does that deliver something, which come from different interests, and produce something we didn't expected. Do we know something new? Do we confirm something we were thinking or does it show that what we were thinking was wrong? This kind of questions

IT: Something else about the materials, I am thinking about the website: which is not available at the Triennale, correct me if I am wrong.

RD: Yes it was, it was available with the iPad, besides the archive, but the internet connection was not working, again it was a logistic problem I guess

EK: But it's very small, it is a very small website. The idea of having a website is that we could upload visualization and data that can be also be used in the exhibition.

IT: I don't know if you can answer this question, but I was also interested in whether you had some references for your work, in terms of aesthetic outcome or the results that you are showing? Something like designer from the past, or some practices already done or is just something that you made up from nothing?"

RD: You never make up something out of nothing, it's impossible right? But that is very typical. It truly is what Eric said: there were some many ways of dealing with the project, that for example the slow walks, there have been references. I don't remember the name of the artist

EK: Paulina Oliveros, she is a bit of a standard of reference in the art science repertoire in the interfaculty where we teach in the Hague, but I think it was never directly there, it was simply, there is a tradition of working in a particular way; often in relation to field recordings and oral recordings and so on but here it was done without a technological layer in between. Sorry Rodrigo

RD: I send you a book that was very interesting, at least for me and it hands about cartography, speculative cartography. And I don't know, because we started with this idea of taking one piece of the garden and looking at it with lot of layers and then a lot of references started to come in. There is a book called "1m² of a forest"²², but that came afterwards, which is basically the project. I don't know, we weren't working a lot with

²² Delso refers to *The Forest Unseen: A Year's Watch in Nature* by David Georg Haskell, a biologist who, indeed, studied for one year just one square meter of a forest

aesthetically references, mostly dealing with the aesthetics of the the tools they were using, allowed us to work with. For example for the cartography we worked with a program called “Grasshopper”. It’s a program for architects to do parametric design. So we brought a friend of mine to teach all the people that wanted to use this program, so it has a specific kind of aesthetics, but we were working on this on a more random base, depending on the program, we weren’t reflecting about that, at all. Then all the archive is transparent, not because we wanted to deal with other aesthetics, like scientific aesthetics or whatever, but it is transparent because all the idea is that you should be able to mix layers, so every drawer is a layer so you can open two and mix them up

IT: Do you had a specific public in mind when you were doing the research?

RD: Yes, and this is also complex, because the audience of the project, was the Zoöp project, right? The most important audience in the beginning is the big project for the Triennale and the big project of the institution. Klaas commissioned us to develop an instrument. So this word, “instrument”, we discussed a lot, last month, we were together there, doing research seminars. So the first audience was to make an instrument for the Speaker for the Living, right? So you will develop techniques for observing a space and bring some clues or some findings as open as they could be, for the Speaker for the Living to know more, to observe more, and capture more of the space that is supposed to listen. So that was the first audience. Then of course there is the audience of the Triennale, but then we didn’t, correct me if I am wrong Eric, I don’t think the audience in the Triennale for the objects, [was taken much into consideration]. It was important for the capsule: we were thinking a lot on how to translate the data into a tangible experience for everyone to understand that, but there was not a specific audience of young, old, whatever, it was mostly trying how do we present this large amount of data into an experience, so that people can understand what is a garden or what are the invisible layers of a garden. So that was very important for us. And that line of thought, is the one

that started to bring the slow walks: how can a wide audience, not a specific, experiment the complexity of an ecological system or space with nonhumans. And that was the second most important part of the project. Now is how we can translate this at-the-beginning “instrument”, into something that can be experienced, something that makes you experience the data. You don’t have to go through all the data that we have, in order to see what is going on in the garden. So we have to bring that in the wider audience.

EK: You could say that in the exhibition you saw the two levels of the translation phase: so this cube, or what we referred to as the “Archive” or “Transparent Archive”, this was much more analytical, so it gives you different analysis layers and still gives you the experience, because you can open the drawers, look at things and so on, and there’s all these different materials and textures there, including water, soil and so on, and junk that was collected from the garden, and plants that have grown on their own there basically, and stuff like that, but also the digital captures (one print-out of the sample from the air, that show pollen in the air, that’s one layer in the archive); but it is primarily an analytical side of the project. Whereas when you stick your head through to the hole in the fabric of the side of the pavilion, to look into that space behind, then you enter a domain, a space, that is entirely experiential. So nothing is explained anymore, you just experience something: sound and image basically. Also a bit weird spacial configuration and strange way of looking. You could summarize that the cube or the “Transparent Archive” is very much the analytical side of this project, whereas this “Capsule” is more the experiential side of the project. And with the “Capsule” there is one detail that is very funny to point out, because in the design that the spacial designer proposed us there was already a destined height for this kind of hole in the fabric, and diameter, and so on, so that was very precisely defined already, but when we looked at it there was only one, and that was at a height that an average adult person could easily watch inside, that was the definition, and I said “yeah, but I want to take my six-year-son to this exhibition and he is getting too

heavy and I am not going to take him up there for ten minutes to let him experience this capsule, so I want a second hole". And there we had a very specific audience in mind, like ok, children should also be able to see this. And then people came with the suggestion that this could also be good for people in wheel chairs, but than in the final design the whole floor was covered with shells, so the wheel chairs actually couldn't enter the space at all. So in terms of a audience strategy that was also a bit of a trial error method. And more generally in terms of audience relation, I think that this is the initial stage of the project: we are looking into if there is the possibility to continue this project, for a longer time, as an extended research thing. In this first phase the whole thing was primarily experimental, trying out things to see what they deliver and finding out along the way. Not too much guided by this notion of the instrument as such, yet, because we kept in mind that this might translate into an instrument, but also that would already have limited us too much. Because the Zoöp model has a very clear definition, the Zoöp model is an organizational model, that makes the interests and concerns of nonhuman living entities part of the organizational decision making process. That's the formal definition of the Zoöp, and then there's all kinds of protocols that relate to that, to develop how can you do it, and that has been developed to levels that are also juridical, that rely on EU regulations and so on. So that is very defined, very defined, in very detail. Great idea, great project. So the interest of Zoöp is "let's develop a set of instruments (which this could be one approach or instrument. You can call it a method also, maybe, but let's call it an instrument), and what is then the primary purpose of this instrument? Is to measure the ecological integrity and quality of a particular site or process". So if an organization wants to be a Zoöp it needs to measure how are we doing. Are we actually making things better in terms of ecological integrity, diversity integrity, or is it getting worse, or is it staying at the same level? And then you need to measure this, so you need instruments to measure that performance. And so from the Zoöp perspective, that's their interest in

having a project like this: to experimentally develop instruments, that could help in making those kind of assessments. But we are really cautious with that, because if we go too far into this instrumental direction, we might also close off all kinds of possibilities that might emerge in a totally open space. So in this first experimental stage it was really important to be as open as possible. They gave us parameters about the budget that was provided for the exhibition, we needed to produce something to show for the exhibition, and Zoöp had the interest for having an instrument. And we had the normal disciplinary considerations from the arts and from the science in this case, and both applied and free). So there is a lot of constraints actually around this project, but we tried to keep it as open as possible. In that stage, I think, the audience is that of a typically cultural audience, who is sort of receptive of this kind of experimental process: so people who are interested in the arts, in contemporary art, people that go to design shows, and professionals in that field, I feel, and students, research and so on), so a kind of a clear audience. Now we go to the next stage of the project, which is “ok can we actually bring this together into something that is more properly an instrument, or a clear methodology, and can that then be shared?” The ideal would be that we build a set of tools and methods that can be given to groups all over any kind of place, when we say “ok, look, here is what we created so far, and these people can apply it and develop it in their own direction, to investigate exactly the same question: what is the quality of their ecological integrity and diversity in a site or process that we are involved in, locally. And then the audience changes, because then is no longer this cultural art experimental design professional audience, but literally everybody, or, this horrible phrase, “the general public”: whoever that is? But this could be farmers somewhere in some kind of suburb site, this could be urban gardeners in another place, but it could be also people working in a steel factory who want to know about what is going on in their terrain, or people in a residential district and want to have a sense clearer of what is going on. Or one of the other organization that want to become

a Zoöp, who say “you have developed this in the context of the Zoöp, I want to apply this as well and look how my organization is doing.

IT: How much of the Zoöp did you take, and how much you were not able to do that?

RD: I think a lot. The project started directly about the Zoöp. Actually the project started because I asked for a research grant here in Spain to go to the Netherlands, to the HNI and also the ArtScience program as residences for one year, and we were discussing already, the three of us (me, Eric and Klaas) to be involved and develop something for the Zoöp project. This research granted didn't go through, but we decided to continue with the collaboration either way, so at some point, one or two months after there was the opportunity of the Triennale, so Klaas commissioned us to do something for the Triennale, to develop an instrument for Triennale and about the Zoöp. So the commission was very clear, our starting point for the project was trying to make an instrument for the Speaker for the living. That was our first audience. And then open it up, because we. Have done many things in the end, like a real collective project. It's not very monolithic, it is quite diverse. If you ask all of the members of the project, they can tell you many different things about the same issue. But in the beginning it was completely related to the Zoöp, and this idea of observing a space with technology for the invisible layers, wouldn't have happened if it wasn't framed for the Zoöp, we were really trying to think how we can help the Zoöp.

EK: The only thing to add about the Zoöp involvement is that Klaas was pretty much part of the team on a conceptual level, as main curator and instigator of the all Zoöp project. So he was very actively discussing with us, not just at the beginning or end, but also during the whole process, very often part production meetings and so on. So the feedback was continuous, but what I try to emphasize is that there is a slight tension, let's say, which is a productive tension between the interest that Zoöp has in wanting the instrument, and the interest we had to first let the research project to be unfold by itself.

And to figure out what does this deliver to us. I think it's great if you have those two elements in your project, because if you just open then it becomes anything goes: yeah, it's great fun, sure, when somebody gives us a million euro, "go and have fun for two years", and I won't say no, for sure, but does that deliver something useful in whatever way? Maybe, but maybe not. It is great to have a context, which says, we are looking for an instrument, because we want to know in the end "can we use what comes out of this project, for the Zoöp process and other zoöps, and eventually, even for other audiences, beyond that.

IT: Where the students chosen? Did they do an audition?

EK: No, we did a selection process, which was very simple: once Rodrigo, Klaas and I have decided "ok, let's work on this project in the garden of the HNI, with the aim of showing something in Milano, there was not a very clear definition at that point, just that there would have been a show in a bit more than a half year, and we wanted to do for a quarter of the year, some stuff in this garden. We quickly drafted an invitation for students and said "if you wanna be part of this project, then you have to write a motivation and send your portfolio, or something (a website, or documentation of whatever you have done so far). At the beginning we were looking for advanced students, so last year of the bachelor or master students. In the end it was all master students, because we had one bachelor student who dropped out, because she in the end didn't have enough time to work on this. The three of us looked at the portfolio and the motivation statements, to decide who could be included in this project, because we didn't want too many people. We actually were aiming for four, but because we had such great applications we in the end decided to take six people. Initially they were told: "ok, you have to work in pairs", otherwise it becomes unmanageable. But I would say, in the end, the process was very individual and collective at the same time. It was very much a "collective of individuals", so to speak.

The Canadian philosopher Brian Massumi coined the term “collective individuation”, which is a nice slogan, and at some point I thought “oh, this is probably what he means by collective individuation, it is happening here”. Collectively become individuals!

One thinker that we didn't mentioned as a reference which is also very important in the whole story (because, you know, ultimately the shared concerns is to somehow make a contribution in tackling the ecological challenge, that we are facing collectively on this planet, right now, therefore, new ecological thinking an theory was of course very important). So quite a few people are quite inspired by Bruno Latour and specially his recent, last couples of works, which I don't need to mention, you probably know this stuff, or at least you know the existence.

IT: Exactly, I know the existence.

EK: But there was a thinker who became particularly important, which is Timothy Morton, this British philosopher, and he became important because with this idea of object-oriented ontology, proposed with a couple of philosophers. They are really looking at like if you have a more complex system (whether it is at the level of ecology, of the organisms, and so on), it usually consists of all kinds of subsystems and all kinds of materials that are there, and all kinds of exchanges with the material environment. So no biological organism can exist without the very complex interactions with the environment. So they are trying to chase those interactions and the term that Morton use for that and it that might come from the general field of the object-oriented ontology is “material chains”. So that certain basic assets and other things (carbon, hydrates) are already present as little bacteria in the soil, but we ingest a lot of those smaller entities into bigger bodies, together with all kinds of other materials or substances, that ultimately constitute our bodies, and with all this collective bodies combined, we constitute different ecologies, and so on. So you can see see that there are chains from the non-living to the living, that are in continuous communication with each other. That was a really important idea to

think: is this method that we are developing here, is that helping us to make those kind of material chains more explicit or manifest? That would be something that this project is also aiming to do. And then Klaas Kuitenbrouwer had a very favorite source, which was Karen Barad, *Meeting the Universe Halfway*.

Online interview between Andrzej Konieczny, Christine Groenborg (students of the ArtScience Interfaculty) and the author, 6th January 2023

IT: Eric told me that your work can be divided into three parts: collection of data, translation and interpretation, so I was interested in knowing what you practically did in this three parts

AK: So basically I was capturing data from the garden, using an ultrasonic bat recorder, so animals. You can record them and see the population or the migration, the place they are going in this garden. And also we had the geophones, so microphones that are put on the ground, that you can measure certain frequencies: quite helpful in the city, if you are just like facing an architecture gardening or whatever. And recording actually regular sound. So basically also regular recorders so audio files, that we had analyzed the spectrum of the audio and what are certain frequencies and what is like the overall experience of this place, and because with audio we can really notice? what is the overall experience of the place because is like super loud or super harsh, or there is one particular frequency that makes the experience of being in a place unpleasant. So also in this recording we found that. And yeah, we had also this kind of idea of becoming a sensor by your body, so it was like human body as a sensor and it was a cycle of practice, performances that we made (with Christine also), so we developed like walking practice, by that we walked in this garden, but it was especially slow walk. I think it was important to notice, because to me it was the most revealing experience as well. So not

only data, like raw data, like numbers, but also very much the idea of being in the place and experiencing it with your mindset, that will be some kind of particular idea or thought. Like, intentional walking was really interesting, yeah. And also well with Christine we developed this branch of this project that we can call “cave recording”, so we made this map that was just holding all the sensors data, and translate it into audiovisual experience.

IT: So you are a sound artist, like, more or less?

AZ: More or less, yes you can say that

IT: So you practically took all the sounding that you captured during the collection of the data, and then you re-elaborated them, in order to, like, expose them in the capsule?

AZ: Yeah, exactly, so the thing is that we had these recordings but also we had these data from sensors and basically, because these recordings were attached to some specific days (like for example it was Monday 21st of February, I’m just saying it was not exactly that, you know, as just an example), and then we had sensor data, weather data and so on, and actually, how this audio file sounds, or where it starts or what kind of samples, or what kind of track of this audio file we get, it was connected to the data itself. So you can experience that. I also think of it always as a time machine, so the whole experience of the capsule was based on the idea that we can go back in time and hear the things that were in the past, and then connect to the several data that we were able to sample, that we had.

CG: But that also... so, some of the data is the sound files but other data is numeric data so you would have numbers as parameters and specific parameters in the soundscape, right?

AZ: Yeah, exactly, so not all audio files are only soundscapes they are experiencing, but also raw data that affected the audio files, or they are also prepared as a soundification,

so we made soundification of data. So raw data translated into sound directives without any audiophiles in previous recordings

IT: And how did you do that?

AZ: Oh, this is like, you know, all data has numbers, the numbers are represented by certain frequencies or like, if you have frequencies modulation, for example, this is one kind of technique used to create sound, so you have an oscillator, which has sound waves, but then you have, you can develop another sound wave that have a certain sound because you are affecting it with different sign wave with different data and these are numbers and so basically the engine was made to sign waves, and both of them were affected by certain data, and provided this frequency modulation. Was not only equal sign waves but rather going up and down. Also they had different timbre

CG: But Ilaria, do you know the program we were working with, called Max msp?

IT: No

CG: It's a software, it's more like an open dynamic software for visual programming, so you can work with it very interactively, so you can connect parameters that also functions as live inputs and than you can build very complex sound scapes and visuals, basically. So I think what we worked with was this very one to one translation that are showing the sounds, but also this kind of map where you can correlate something with something else but is not specific, could be anything, but is more about how it decided as well.

AZ: Exactly. So you also need to have some kind of artistic choices as well in this project!

CG: Yeah! We were six people, each of us were in pairs had specific sensors, and I was working with both these soil samples, I collaborated with a mycologist, a researcher. So she would take the soil samples and then analyze it and DNA sequence whatever is in this soil. So I would see what kind of fungi would be there. But we would have not known whether we would have live at that, but the idea was that the most samples we would have, the more we could see the development of the garden in terms of the fungi. Then I

was also working with this little self-made instrument that was sensing the electromagnetic fields, so also Andrzej was talking about when we were walking around in the garden as we used our bodies as a sensors I would just use the instrument to scan the ground within the path, and you could hear, for example, you could hear very clearly the normal grounding power we have 50 Hz and some very human made influence is everywhere so would have been very difficult even to sense this biological creatures. I then was also trying to build this mycelium system to listen to the mycelium (this fungi). And then through there, change of electrical activity I would be able, with time, to correlate this sound with samples, but in the end it didn't happen so. We did some testing and something worked but something... and then I was doing this walk with Andrej and the others, with the body as a sensor. So with the interpretation I was with architect Rodrigo and one of his friends we were working on the rhinomapping sketches, the choreographies, I mean cartography.

AZ: But could have been choreography!

CG: Yeah, should be! So this Rhinoceros and then there is this app called Grasshopper, where you can work with a lot of data. So for me I was the one in control of putting all those data together in the cartographies and trying to correlate them somehow. So there was many decisions to be made in terms of ok, how much is this, how important is it to communicate how we actually see in terms of what level do we need to understand, what is specifically the mycelium in the ground or the sound that is sensed, what is ultrasonic and what is put in the hearable range for example, how important is it to the overall impression of what happens over time in the space. And on the other hand, also come up with something that could be either coherent or incoherent but I was one person doing this so I tried to make it somehow coherent and be aware of making each of the samples very clearly distinguishable from each other. This was one part, and the other part was also contributing to making this visual part for this experience within the hall, that I put

together very needly yeah. And so it would be with this max msp system, where different parameters would define, for example, the color of the system, the pace, the speed and the moving within, how many would have been and this different kind of parameters, within the system. And right now I see that this is one version, but it could have been so many different things but only with time. The only thing about this is still, it's not finished, it would still be developing when we would have more and more samples, in the sense that would be more and more clear where to scope in with specific scales and times, different sizes to see how they move in relation to each other, but only by that like seeing the different time samples you would be able to see this.

IT: Are you actually planning to continue the research or you don't know yet? I guess the sensors, are they still there or have they took them off?

CG: Actually there is only this weather station that are permanent and the heat camera, other than that most of the sensors we brought each time to do the sampling, because it is also a public place, so it was difficult to leave things just there. But yes to answer your question, we are planning on developing the project and do another round and this is also seen as a free experimentation studying point. We now have a better knowledge to build the plan, in a way, that is more informed in a sense.

IT: Rodrigo and Eric were telling me that they had some literature in mind and have some practices, especially they told me about Paulina Oliveros as a name for an artist, so I wanted to know whether you also had those kind of references whether you had others in specific, or if you don't really have some.

AZ: If I think about Pauline Oliveros. So the book is called *Sonic meditations*, and it contains compositions, for groups of people, she made actually one or two in San Diego and it was like this kind of feminist choir that she was also, like, contributing to, and then she made a cycle of sounding meditations, which contained instructions instead of compositions, so there was like, not notes, because Pauline Oliveros is like basically a

composer, but she made instructions, that were just something to develop together, within this choir. So I think with Christine we got really much affected by this idea of having the instructions or connect the sound, like soundscapes, with the practice of meditation. I think we were both affected by this. Also, she wrote this book called “Software for people” also by Pauline Oliveros and it’s more explanatory on how you can make instructions that are connected with the meditation practice, within a group of people, and it’s connected also from this perspective of a composer. But then I think like more about what would be the literature would be rather Bruno Latour, this modern view on ecology and environment. I think Christine has more to say.

IT: But did you actually read those books or you just have an idea of what they are?

AZ: I mean from my perspective I just read that before and it was rather about a down to top perspective, for me. So I have this practice before, I thought that it would fit with this concept and to this project that we had in result (DataFusion), instead of thinking about what kind of research we need to make. I think it was more an embodied idea, from my perspective. But then, for sure, all the things that Eric proposed and Rodrigo proposed as more like also (I’m just saying from my perspective) for this modern ecological perspective of course I was just reading it, and was not embodied before this project, yeah.

CG: Can I add something? Because for example James Lovelock, this book Gaia, I was reading it before and only Klaas for example was mentioning Karen Barad, yes, than this was new and the way she is talking about instruments and how we are in the world with instruments, this was kind of an addition. But other than that, yes, Bruno Latour and his “Down to earth” and Gaia, and how do you think about this area as the full body of itself, and as a creature almost in itself, and this for me was very inspired by James Lovelock Gaia. And many of this kind of also thinking about the holobiont by Lynn Margulis and the symbiotic planet. But I think also both me and Andrzej are really fans of Pauline Oliveros,

this was definitely brought to top the table that this kind of instructions, this way of listening in a meditative way to your environment, or paying attention in this sense, was perfectly encapsulated in us.

AZ: Yes

IT: And like from the sounding perspective did you have any practices in mind, any references for the sound project that you made?

AZ: I think it was not about reference. When I applied to this project, I remember it was kind of an open project but you need to apply with a motivation letter and portfolio, and I remember when I got accepted within the DataFusion experience situation Eric just approached me and say “you know, I was very surprised because it is completely not about sound, but we will just see how it will turn out” and then you know, suddenly we are in Milano and then you all capsule is about audio-visual experience and within audio practice there is so much to explain. It was basically also interesting to know how much audio can say about environment. But yeah, I think we had kind of experience and we can say, experience and expertise to make it also. Because, also you know, we are just moving around pushing our boundaries, but also around our practice and borders, so it is also, I know, just for me it was obvious to just examine the idea of the audio. It was also nice because all people were just in an overlapping at some point, but they were giving different perspectives and different tools, and having different practices. So, if we are prepared in this audio I am not so sure, because it is more about practice.

CG: But I think both of us, you Andrzej a lot as a composer, but also I worked with sound before and working in this way is not unfamiliar to us, so it was very easy to go into this mindset in a sense, and also this kind of consideration when you know how to design for, it affects also how you collect data for example, but I think we somehow waited to take this decision “what are we making”, until quite late in the process so could still be very

open the way we were gathering data, then when you have it to see what is possible as well.

AZ: Exactly

IT: I have a question for you Christine, how long have you been studying mycelia and all these other-than-human things? Because I guess, do you have a small scientific background or you just approached through the art?

CG: I only started the last year when I was actually studying the master and moving to The Hague, and having this like radical change in what I was doing with my artistic practice or whatever you wanna call it. So it's not too long, but I really appreciated that I could have this collaboration with this scientist, because she is very very keen to help and discuss these methods and I think, this is what I am most interested, more than what I did before this study, that I collaborated also with other scientists, in order to have also this kind of art-science discussion: so you have a discussion within their practice, but also how you can work with the material in an artistic way. But then there is always this kind of question of becoming just a simple communicator and how you insist in the artistic approach. But no, I only started working with the mycelia last year, but for another project, and so on.

IT: If you want to tell me something that you find relevant but I didn't ask you, I am open to

CG: I don't know if you are going deeper in those collaborative processes

IT: I mean both of you, and also Eric and Rodrigo were really stressing this part, so I think this is the most relevant for you. Actually, who took care of that? Were you deciding together or did you follow some specifics?

CG: I think it was very experimental to some extent. We were shifting between who was going to take the lead of it, I did the Vivien's for example, and Andrzej you did it as well.

We had specific ideas and frames for it, so we presented it to the group and, luckily, people liked it. And then we did it together, and executed it, in different places.

IT: And you did it also with a public audience, with other people outside your group?

CG: Yes for sure. For example what Andrzej did in Milan, was with the public group, but it was not a data gathering. It was like a way to sense your environment.

AZ: Exactly, so we were making this during the opening of the Dutch pavilion, we were making a tiny performance which was that people were closing eyes and we had very dry leaves, and we had sea shells, and we were just moving around people that had tiny encounter in their hears

IT: I was there as well. How did you call this practice?

AZ: I mean, in a way you can also say this is a sounding meditation, developing awareness towards the environment and sounding the environment. But I think there is not such a word or tools that we can say "it's exactly this". It is also experimental and also rooted in most of meditation practices. I think it safer to say that.

Appendix II

Figures



Fig.1. Henri Matisse, *Femme au violon*, 1921/22, oil on canvas, 55 x 46 cm, Musée de l'Orangerie, Paris.



Fig. 2. Matteo Silverio, *SkyTide*, 2021, Murano glass, Ca' Foscari, Venice. Photo by the author.



Fig.3. Edgar Degas, *L'absinthe*, 1875-1876, oil on canvas, 92 x 68 cm, Musée d'Orsay, Paris.



Fig.4. DataFusion Instrument. On the left, the iPad from which to consult the website, on the right the "Transparent Archive" and in the background the two holes of the "Capsule". Photo credits: Cristiano Corte.



Fig.5. *Transparent Archive*. Photo credits: Cristiano Corte.

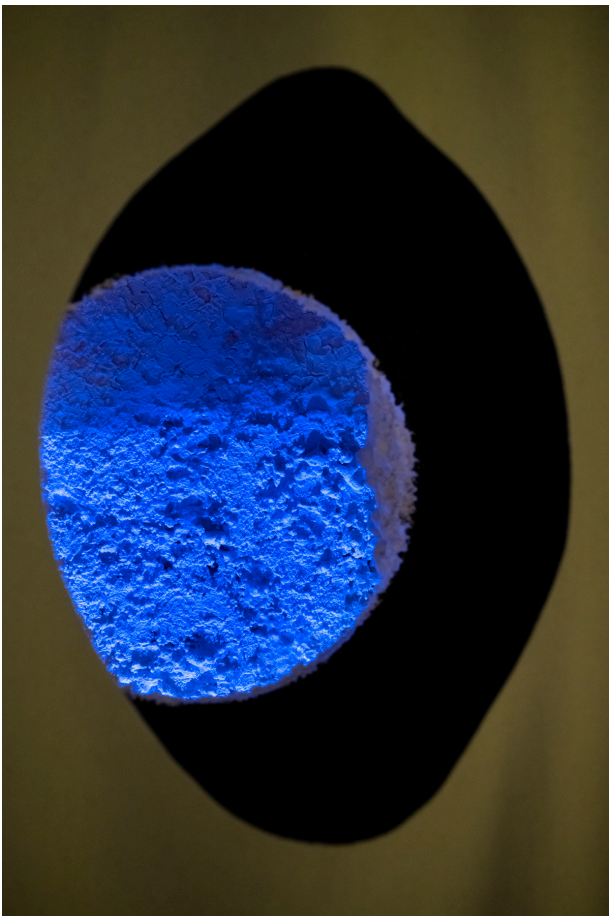


Fig.6. *Capsule*. Photo credits: Cristiano Corte.



Fig.7. *Transparent Archive*. Photo by the author.



Fig.8. David Hockney, *Peter getting out of Nick's Pool*, 1966, acrylic on canvas, 152 x 152, National Museum Liverpool.

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