BEYOND THE HUMAN

UNSTABLE MEDIA ART CONSTRUCTING NEW SOCIAL REALITIES

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ACS Master Thesis

June 18, 2021

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ABSTRACT

In times of current social and ecological crises, there is a need for urgent action. Many argue that the major cause of climate change is that our dominant paradigms are deeply rooted in traditional Western human-centred ideology and anthropocentric attitudes towards nature. The need to envision a completely new ontology, which redefines toxic human-nonhuman relationship, places artists in a unique position. Although the role of arts in (re)shaping social realities is recognized, it often remains unclear *how* exactly it is done. Drawing widely on posthuman theory, this study argues for the potential of art to social change, illustrating specific ways through which art engages with the critique of anthropocentrism and creates new social imagination, which includes both human and nonhuman perspectives and realities.

This research is situated in the frames of so-called "new sociology of arts". Focusing specifically on the works of art, this study looks for their relation to broader sociocultural contexts of the ongoing posthuman turn. Drawing on "Manifesto for the Unstable Media" (1987) published by V2_ Lab for Unstable Media, this research analyses the selection of artistic projects that fall under the category of "Unstable Media". The unique characteristics of unstable media art, in particular its technological nature, participatory and interactive aspects, and instability are seen as an intrinsic factor to social change.

Through utilizing a qualitative content analysis method, this research analyses the selection of artworks from the digital V2_Archive. The findings identified three major categories that form the basis of this study and are presented through the more extensive analysis of twenty-three the most illustrative examples of artworks. Results of the analysis show that unstable media art is particularly effective in taking a more inclusive approach and recognizing the realities of nonhuman biological agents, positioning the human among the myriad of conscious and sentient nonhuman forms of life. Another inference drawn from this study is that unstable media art becomes a platform to rethink human relationship with technological others. Finally, unstable media art takes a non-anthropocentric view on the environment, constructing an environmentally aware society, suggesting sustainable solutions and imagining non-hierarchical interspecies relations.

KEYWORDS: New Sociology of Arts, Unstable Media Art, Ecological Crisis, Posthumanism, Nonhuman Others

Acknowledgments

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1. INTRODUCTION

"Art has to be functional. We see art as a creating principle in society. Art has to make use of the materials, the media and the possibilities of its time in order to have influence on its time. Science and art have to be a revolutionary power within society [...] It must not become an autonomy within our social system, but it must be a part of it, not to confirm the prevailing morals and politics but to propagate change" (V2_Organisation, 1987).

Written four decades ago, this statement has never been more relevant. "Manifesto for the Unstable Media" (1987) published by V2_Lab for the Unstable Media (hereafter referred to as V2_) emphasizes the revolutionary power of art within the society and instability as an intrinsic factor to social processes. Now we find ourselves in times of crisis that many refer to as the "Anthropocene": a proposed new geological "human" epoch in which humanity is the primary geological agent having a detrimental impact on the planet (Davis, 2018). The severity of the human-caused ecological crisis demands urgent actions to raise awareness on environmental damage and rethink our human-centred relationship with nonhuman others; yet the power of art to elicit this action and make lasting social changes often remains unclear. This research, thus, focuses broadly on the need to reshape our collective imagination in relation to the world in ecological crisis, asking, how can this be accomplished through works of art?

Throughout history, art has proved to be a major force in shaping social realities. It has played a significant role in articulating problems, educating people and challenging dominant beliefs (Belfiore & Bennett, 2007). In today's social context, artists seem to be committed to responding to ongoing global environmental issues and reflecting upon the taken for granted paradigms that prioritize human wellbeing over nature and result in ecological degradation. Recent studies have found that contemporary artistic practices can foster changes by contributing to the climate change debate (Burch et al., 2009; Chandler et al., 2014; Roosen et al., 2017), environmental education (Branagan, 2003), promoting sustainability (Dieleman, 2008), and communicating ecological scientific information (Curtis et al., 2012).

However, the severity of ecological challenge requires not only ecological awareness but more radical systemic social changes – specifically, a renewed human relationship to other beings with whom we share and inhabit our world. Some argue that ongoing environmental crisis is a consequence of the long history of humanism - a philosophical and artistic tradition concerned with the agency of humans; and the ideology of anthropocentrism that places human perspectives at the centre of the world and prioritizes human concerns over others' (Kopnina et al., 2018). The hierarchical form of our social relations with non-human

others is damaging the ecology, thus a complete reformation of the human-nonhuman relationship is necessary (Sessions, 1974). Given the seeming inevitability of ecological crisis, many call for a shift towards "posthuman" approach to inhabiting the earth, which rejects the traditional Western humanist ideology (Badmington, 2000; Barad, 2003; Braidotti, 2013; Hayles, 1999; Herbrechter, 2013; Wolfe, 2009).

The "posthuman turn" (Braidotti, 2013), which includes theories in humanities and social sciences, may signal a potential transition to new discourses making anthropocentrism explicit and paving the way for non-hierarchical relationships between human and nonhuman species. Yet when it comes to the need to reimagine existing relations and envision a completely new form of perception and management of the world, it is the responsibility of the arts to develop a framework for a broader public discussion (Braidotti, 2013). As Braidotti and Hlavajova (2018) declare: "the assumption that we need to experiment with different ways of thinking places the contemporary artists in a crucial position for scholars struggling with the protocols of established academic work and language, and vice versa" (p. 5). Therefore, art serves as a site where scholarly critiques become imaginable and perceptible to a broader public (Wamberg & Thomsen, 2016).

Drawing on the aforementioned "Manifesto for the Unstable Media" (1987), this research argues specifically for the ability of technology-based, electronic art to communicate current environmental issues, challenge deeply entrenched inequalities between human and nonhuman, and imagine new "posthuman" realities. Important to mention yet another manifesto this research refers to is the seminal work of the influential feminist Donna Haraway. In her "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late 20th Century" (1991) the author theorizes the implications of technologies on the construction and social organization of life. Artists who use innovative technologies can create visions that go beyond human capabilities, allowing the viewer to receive data beyond what human sensory organs can collect and envision different perspectives on the world, going beyond a focus on human well-being or human agency. Technology-based art is often participatory, experiential and offering sensorial experiences that are proved to be more emotionally engaging and stimulating (Vi et al., 2017). Additionally, by recognizing the technological agency of adopting a posthuman perspective, as Christine Paul (2008) notices, some of the foundations of the traditional art world are challenged. For example, Emmanuel Kant's established notion of artistic genius and understanding of art as something unique to humans is undermined by acknowledging the creative output of the machine. Finally, as Haraway argues, the use of technology makes us all "cyborgs" (cybernetic organisms) (Haraway, 1991) with enhanced, more-than-human abilities.

Therefore, contemporary technology-based art does not merely reflect the social reality, it has the potential to create new artistic and social norms.

The object of this study is a selection of artworks stored in the digital archive of V2_. V2_ is an interdisciplinary centre for art and media technology in Rotterdam (the Netherlands) that presents, produces, archives and publishes research at the interface of art, technology and society (V2_Lab for the Unstable Media, n.d.-a). As writer and editor at V2_ Arie Altena states, "though the original manifesto is now a historical document, it still serves as an inspiration. V2_'s current mission statement contains not only a reference to unstable media, it still states that instability is a creative force that is essential to the continuous reordering of social, cultural, political, and economic relations in society" (Altena, 2013, p. 352). V2_ is concerned with artworks under the category of "Unstable Media", which is defined as "art created with technological media, unstable (i.e. modifiable, unfinished, process-based) by nature" ("Glossaurus - Unstable media", n.d.). Since the publishing of the manifesto and up until this day, V2_ collects documentation of works of art presented or (co) produced at the institution by local and international artists in residency for the last two decades. Preserved in the digital archive which is accessible publicly online, artistic projects documented in the archive "not only explore and settle new (visual) worlds of representation but also involve technologies that manipulate physical things, for example: robotics, nanotechnology, biotechnology" (Frommé & Fauconnier, 2003a, p. 7).

While the "Manifesto for the Unstable Media" (1987) does not engage explicitly with the posthuman or ecological critiques that are the most relevant today, the goal of the institute, as stated, is to propagate change modifying the prevalent structures and systems, allowing for the emergence of new ones (V2_Organisation, 1987). These statements go in line with my aim to look for artistic practices that can potentially work as a catalyst for increasing societal awareness and helping to solve the cultural, political and ecological crises we are facing today. In this research I argue, that the increasing importance of innovative technologies and other specific characteristics of unstable media, such as its indeterminate nature, participatory and interactive aspects (allowing for the interplay between man, animal and machine), and experiential and sensory qualities, are crucial for communicating the idea of the posthuman. Although some of the artworks discussed throughout the study engage with the posthuman critiques, most of them are not explicitly linked with the concept of the posthuman. Artworks are not exclusively self-identified as posthuman art nor do artists directly address the goal of changing social relations between humans and nonhumans. The works engage with a range of different topics and narratives that are related to the posthuman turn as I theorize it in either

obvious or subtle ways, which makes it a fruitful area to look for the underlying and overlooked abilities of technology-based, electronic art in conveying posthuman themes and critiques.

The research question of this study is as follows: *Taking V2_'s collection of Unstable Media art as a focus of this study, in what ways can art engage with the themes of the posthuman turn, and how specifically can it help to construct or imagine a social world that includes both human and nonhuman agents and perspectives?*

In other words, how unstable media art can challenge prevalent anthropocentric and what role can unstable media art play in constructing social realities that go beyond human-centred relation to nature and other nonhuman beings? To answer the research question, through the method of qualitative content analysis I examine 100 works of art (see Appendix B) from the digital V2_ Archive created in the period from 1992 to 2020. The purpose of this study is twofold: first, it seeks to exhaustively analyse the large body of artworks to present the recurrent patterns of ways in which artists challenge anthropocentric thinking and construct a social world that includes both human and nonhuman agents and perspectives. Second, through empirical examples, it aims to identify and systematise a body of actions that art does in terms of responding to current social and ecological crises and shaping our collective imagination about possible forms of human relations with the nonhuman world.

The sociological importance of art has been studied from a variety of perspectives: as communicative and meaning-laden objects that have an impact on human actions; as social texts that reflect the society and its shared sociocultural systems; as a commodity that influences the organization of cultural systems (Acord & DeNora, 2008). Nevertheless, "there has always been a blind spot in the sociology of art: any discussion of specific artworks" (Becker et al., 2006, p. 1). There is a significant lack of empirical studies undertaken considering the independent role artworks play in modifying and shaping social realities and how they are related to the social structures and broader sociocultural processes. Therefore, this research is situated within a so-called "new sociology of arts", which studies artistic objects as sociological phenomena. The key contribution of this study is that it develops a broader theoretical framework of social functions of socially and environmentally engaged art, which stems from a content analysis of the qualitative data.

Bringing posthuman philosophy, media studies and sociology of arts together, central to this research is the proposition that unstable media art can act as a different kind of knowledge production, and can provide critical insights into dominant social beliefs and re-shape social values, specifically human attitudes toward nonhuman others. With this exploratory study,

illustrating previously unstudied material examples of the posthuman turn in media and visual arts, I argue that thinking about the ecological crisis, human relationship with nature, animals and technology, as well as understanding what it means to be human through artistic practice might become an effective and no less powerful way to liberate us from traditional Western human-centred thinking and reshape traditional anthropocentric systems of knowledge. This study, therefore, contributes to the ongoing academic debates on art's role in posthumanism.

The rest of this study proceeds as follows: following the introduction, defined purpose and significance of the research, I provide a review of the literature on the social role of arts, emerging posthuman discourse and unstable media art, that are considered to be relevant to this study. After that, I briefly discuss the previous research on the artistic practices engaging with the posthuman turn, concluding with the research question and expectations for this study. Next, I elaborate on the chosen method, sample selection, operationalisation and the analysis of data. In the findings section, I present the results of the analysis and discuss twenty-three the most relevant examples of analysed artworks, which are conceptualised into three thematic categories, namely (1) The Presence of Others, (2) Technologically-Mediated Existence and (3) Towards a Posthuman Future. In the last chapter, conclusions are drawn along with limitations and implications for further research.

2. THEORETICAL FRAMEWORK

This study utilises ideas drawn from interdisciplinary fields, uniting perspectives across sociology, philosophy and feminist studies, which in this research have been theorized in relation to art specifically. The chapter is comprised of five theoretical sections, namely: (1) New Sociology of Arts, (2) Social Role of Arts, (3) Humanism and Anthropocentrism, (4) Posthuman Turn, and (5) Unstable Media. First, I introduce the new movements in the sociology of art and art's role in the social construction of reality. As this research takes on a posthumanist approach, I further outline the development of the theoretical frameworks of humanism, anthropocentrism and posthumanism, discussing works of seminal theorists such as Donna Haraway, Rosi Braidotti, Katherine Hayles and Joanna Zylinska. Drawing from the existing literature, I discuss how the posthuman is suggesting new possibilities for using art to create new social realities, ones that require new ways of conceptualizing and interacting with the nonhuman world and facilitate comprehension of and response to the current ecological issues. In the next section, I discuss technology-based art and the concept of "Unstable Media". I explain how certain characteristics that have been already theorized in art (e.g., technological agency, participatory and experiential aspects of artworks) can be seen as potential tools for art to challenge or expand certain ideas about the social world in regards to nonhuman others and ecological crisis. In the last section, I provide a short discussion about previous research, establish the research question and set forth expectations for this study.

2.1. New Sociology of Arts

Now established as a sub-field of social sciences, the sociology of arts explores the relationship between art and society primarily through the concepts such as art worlds (Becker, 1982), perception, status and taste (Bourdieu, 1986), completely excluding the meaning and content of the artwork. Nevertheless, scholars ask, "can the sociological investigation of the arts afford to ignore the artwork and focus primarily upon contextual factors?" (De la Fuente, 2007, p. 410).

Recently, there have been signs of opening up to new directions that are identified as a "new sociology of arts". Building on the human social worlds around the work of art, new movements in art sociology are taking new "meaning-centred directions" (Eyerman & McCormick, 2016, p. 11). The new sociology of art is focusing on "what meanings and motivations are involved in the production of art objects and communicated in their reception, and how are these related to wider social processes and structures?" (Eyerman & McCormick, 2016, p. 2).

Expanded sociological approaches perceive works of art as representations of knowledge and forms of communication, which can tell us about the world we inhabit more than only about the class position or status (Eyerman & McCormick, 2016). Such an example is Witkin's (1997) analysis of Manet's "Olympia". Offering a new approach by reading particular artwork in the social context, an author interprets it as a reflection of the transition from traditional to modern society and as an illustrative example of social change (Eyerman & McCormick, 2016). Extending the field of sociology of arts in this way to include art objects themselves in social relations, the research field is moving towards the "subjective meanings of cultural objects, notably as they emerge through interaction" (Acord & DeNora, 2008, p. 226).

The present study, therefore, is situated within the new sociology of arts, taking this new approach of studying changing narratives in society through particular works of art. Bringing artworks into view and relating them to wider social structures and sociocultural processes, this study analyses artistic endeavours that, in Eyerman and McCormick (2016) words "provide a cognitive space for the criticism of contemporary society, the articulation of a political project, and the imagination of a different future" (p. 9).

2.2. Social Role of Arts

Focusing on the meaning of the artwork, which is created through the interaction with social context, the new sociology of arts refers to the social role of art. "Art becomes a conveyer of meaning, a form of communication, with the potential for enlightening as well distorting. Rather than merely reflecting the social conditions of its production, art may provide a prism through which to reflect on those conditions" (Eyerman, 2016, p. 22). Being related to broader social and cultural structures, art has a long history in perpetuating values, reaching and educating the wider public and inspiring people (Reichold & Graf, 2003). Theorists such as John Dewey (1934) and Ernst Fischer (1963) have long proclaimed art's social functions, considering art as a tool for communicating concerns and yielding societal insights. Dewey in his seminal work *Art as Experience* (1934) stresses the ability of art to communicate moral purpose, conveying messages that stimulate reflection and accordingly influence certain actions. Essential to the myth-making process, art plays a significant role in forming collective identity (Eyerman, 2016), engaging people in social movements (Adams, 2002) or generating alternative social models (Esche & Bradley, 2007). The book *Art and Social Change: A Critical Reader* (2007) presents numerous historical examples of art making change in society, from Dadaists, who confronted the dominant social order and aimed for revolutionary social change to feminist art that demanded social equality. That is to say, in Hill's words, "what art does do - and what is difficult to measure - is that it changes our individual and collective imaginaries by particles, and

these new pictures of the world can influence our behaviour" (Hill and McCall, 2015, as cited in Davis, 2018).

In terms of current social and environmental crises, art can be an effective form of communication. There is a growing agreement among practitioners that art has the potential to convey scientific information and urgent messages that may not be perceptible in everyday experience. As Arnold Hauser notes, art is a source of knowledge as it carries forward the work of science but also "points out the limits of scientific competence and takes over at the point at which further knowledge can be acquired only along paths which cannot be trodden outside of art" (Hauser, 1951 as cited in Bernstein et al., 2010, p. 14). Seen as an alternative form of knowledge production (Hirst, 1974), art can synthesize and convey complex scientific information in creative ways, while the experiential nature of the artwork can create an intimate, sensual experience, translating information to the wider audience. Transdisciplinary practices on the intersection of art and science can achieve unpredictable results and communicate ideas that cannot be approached by science alone (Born & Barry, 2010). Integrating arts into learning has proven to have a great potential to transform and enhance the education systems in different study areas (Parsons, 2004). Bentz (2020) found out that climate change can be successfully communicated *in*, *with* and *through* art. The study proved art to be a beneficial resource for education on climate change, as art calls forth the dialogue with the processes going on outside the classroom, making it a great field to look into the world and try to make sense of it.

As scholars (Roosen et al., 2017) argue, climate change communication, among other things, often lacks narratives that engage people to relate environmental issues to their everyday life. This way it fails to create emotional responses, stimulate contemplation or inspire people to action. As Doyle notices in her book *Mediating Climate Change* (2011), the "change in thought can only come from an understanding of how our thinking about climate change is shaped in the first place" (p. 4). The need to visualise climate change in a way to make it more personally relevant and provide an emotional basis makes art a great approach to draw public attention to societal issues in unconventional ways. Therefore, Doyle (2011) raises the question: how can art present alternative ways of communicating the urgency of climate change by employing different sensual and emotional experiences?

Environmental art can contribute to the spectator's epistemic and emotional sensitivity, escalate viewers' involvement by using metaphors and evoking reflection through the personal experience (Roosen et al., 2017). A study about the potential of compelling 3D visualisations of local climate change scenarios showed that addressing climate change in participatory ways and enhancing visualisations can increase emotional engagement and become

a powerful tool to trigger publics' responses (Burch et al., 2009). From a psychological perspective, studies have shown the potential of climate-change related artworks to commence long-term changes (Roosen et al., 2017) and lead to taking on pro-environmental behaviour (Curtis et al., 2012). Thus, the communication of climate change through the artworks is more likely to resonate with the audience rather than complex scientific findings, which are often ungraspable to the wider public.

Unquestionably, art is not the only nor necessarily the best type of climate communication, as Doyle cites Bunting: "the visual arts reach a particular audience and many of them are already engaged in this [climate change] issue; it's not clear how or whether it can reach new audiences" (Bunting, 2010 as cited in Doyle, 2011, p. 153). Nevertheless, going beyond the academic and scientific realm, by encouraging participation in art (Johansson & Isgren, 2017) and targeting other audiences, art has the potential to reach different strata of people and contribute to the gradual transition towards a more environmentally conscious society.

2.3. Humanism and Anthropocentrism

Climate change has been recognized as an issue since the mid-1980s (Doyle, 2011). As Doyle (2011) argues, there are many framings of climate change, which affect how we conceptualise and respond to the ecological crisis. The most common way, however, in which climate crisis has been theorized is based on a prevalent division between nature and culture. In other words, nature is conceptualised as external to the human world. The separation of nature and culture, or the human and the non-human, has established and reinforced power relations, legitimizing dominant human behaviour towards nature (including animals) and seeing the environment as an exploitable source separated from human life (Doyle, 2011).

The origins of this dualistic thinking are found in classical humanist thought that emerged in the Enlightenment era. Humanism is constructed from the Latin word *humanus*, which in ancient Rome referred to a specific kind of human - "humanus was what distinguished, and separated, the civilized human beings from animals and the barbarian peoples" (Ceder, 2016, p.40). The humanist strain of thought marks the man as the measure of all things, simultaneously advocating for the superiority and exclusiveness of humankind. It perpetuates the dichotomy between nature and culture, establishing binary categories of human/nonhuman that have been foundational to the Western world. Humanist ideology has been highly criticised for its intrinsic relation to anthropocentrism - an ontological human-centred paradigm referring to the supreme human position toward the rest of the world, that is, nature and non-human beings (Purser et al., 1995), which as scholars argue, lies at the roots of ecological crisis (Kopnina & Cocis, 2017).

Art has had a great influence on perpetuating an anthropocentric worldview. Scholars (Purser et al., 1995) distinguish few areas that contributed to the development of manifestations of anthropocentric thought in artistic practice. First, the linear perspective of vision employed by artists in the Renaissance had cognitive effects on the relation to the displayed reality. Establishing the single, fixed vanishing point on the horizon was associated with the expression of individual perception of the world which depended on the eye level of the (human) observer through seeing (Lepenies, 2018). This visual expression signified the move from a theocentric worldview (from the omniscient point of view of God or deities) to an individualised, dominant and privileged point of view. Lepenies (2018) calls this shift "Anthroposeen". As art historian Michael Ann Holly writes, "perspective exemplifies not just the physics of the eye, but the metaphysics of Renaissance culture, for it is an expression of the desire to order the world in a certain way" (Holly as cited in Lepenies, 2018, p. 590).

Second, the introduced camera theory of knowledge, which suggests that the best knowledge is obtained from a distance, removing and privileging human subjectivity from the rest of nature. For instance, Garoian (1998) discusses the role of the traditional Western landscape paintings that located the viewer outside or represented nature as sacred space separated from profane. These historical representations of landscape in art acceded to the perception of the world as a distanced spectacle and influenced human Eurocentric attitude towards nature, perpetuating the exploitative attitudes towards the environment.

Finally, the social construction of the human and nature dualities that emerged in the age of Enlightenment along with Descartes, introduced a pivotal dualism between the "divine man and soulless nature, reducing nonhuman animals to the status of unfeeling machines" (Rodman, 1980, p. 61). With regards to nonhuman others, our understanding of animals is shaped by their portrayals in art, as our perception of animals relies on their representations rather than by the individual experience of them (Baker, 2001). As Rothfels (2002) states, the way we "…photograph animals, think about animals, imagine animals- represent animals -is in some very important way deeply connected to our cultural environment…" (p. xi). Throughout history, animals were represented in visual art as allegories and metaphors, carrying a symbolic meaning. Only in postmodern times, the symbolic use of animals started to decrease (Dover, 2008). Moreover, the study of portrayals of the human-animal relationship in visual art shows that throughout the history up until modernism, although with exceptions, the human was positioned in dominance and superiority over animals. For instance, artworks represented animals being hunted, confined in cages or acting as human entertainment in sports activities (Dover, 2008).

Although the abovementioned elements are not limited to artistic representation and apply to a more general way of seeing the world, scholars have argued that these pictorial methods used by artists have played a role in fostering the anthropocentric perception of the world. This dualist perspective continues to this day, as humans keep exploiting nature and mistreat animals. Therefore, it is argued, to change the current state of things, "fundamental perceptual and attitudinal change" is indispensable, as our common structure of values is "deeply rooted in a human-nature dualism" (Purser et al., 1995). The solutions to ecological crisis have to be sought in a completely new ontology (Horn & Bergthaller, 2019).

2.4. Posthuman Turn

The ongoing political, cultural and especially ecological crises have accelerated a growing interest in posthuman discourse across disciplines. The "posthuman turn" ensued as a consequence of anti-humanist and anti-anthropocentric critique (Braidotti, 2013). The posthuman discourse involves a broad range of theoreticians and philosophers who question and criticise the dominant humanist framework. Although the term "posthuman" proliferated only in the mid-1990s (Wamberg & Thomsen, 2016), concerns about the dominant social paradigm and efforts to rethink the notion of the human, liberating us from the traditional Western binary, emerged decades ago. Origins of posthumanist thought, which seeks to make anthropocentrism explicit in order to critique it, can be found in the philosophical writings of Jacques Derrida (2008), Gilles Deleuze and Felix Guattari (1987), Jean François Lyotard (1992) and others. The theoretical framework of posthumanism has emerged more recently in such foundational texts in the history and philosophy of science as Cary Wolfe's *What is Posthumanism*? (2009), Richard Grusin's *The Nonhuman Turn* (2015), Rosi Braidotti's *The Posthuman* (2013), Katharine Hayles's *How We Became Posthuman* (1999), Neil Badmington's *Posthumanism: Reader in Cultural Criticism* (2000) and many others. Posthumanism offers a critical stance towards Western philosophy of humanism deeply rooted in Cartesian binary systems as well as anthropocentrism emphasizing human exceptionalism and hierarchical relation to the world. As Hassan (1977) states, "we need to understand that five hundred years of humanism may be coming to an end, as humanism transforms itself into something that we must helplessly call posthumanism" (p. 843).

Posthuman theorizations have arisen among different disciplines and study areas, which all create ground for knowledge production and new discourses. Yet in this thesis, I am adopting fundamental notions of key thinkers, which appear to be the most relevant while looking for the manifestation of posthuman thought in art. I distinguish three main strains of posthuman thought drawing on the theoretical works Donna Haraway, Rosi Braidotti and Katherine Hayles.

First, Braidotti defines "posthuman" as a confluence of critique of the humanist "Man" as the unit of measure of all things and critique of the hierarchical system and anthropocentric exceptionalism of thinking the human (Braidotti, 2018). Katherine Hayles argues in her book *How We Became Posthuman: Virtual Bodies in Cybernetics Literature and Informatics* (1999) that there is a need for decentralization of human from the discourse, acknowledging the nonhuman entities we co-exist with. A huge part of the posthuman discourse addresses the relationship between human and nonhuman others, recognizing the multi-dimensional relation with animals and other living agents. Some scholars attempt to convince the society that other than human living organisms possess similar qualities as humans do, which is a considerable reason to acknowledge the inherent worth of each organism (Taylor, 1986).

Second, posthumanism aims to subvert dualisms of "self/other, mind/body, culture/nature, male/female, civilized/primitive, reality/appearance, whole/part, agent/resource, maker/made, active/passive, right/wrong, truth/illusion, total/partial, God/man" (Haraway, 1991, p. 177). It challenges the separation of *bios*, the notion of life attributed to humans, from *zoe*, the notion of life attributed to animals and other nonhuman entities (Braidotti, 2016).

Criticising dominant power relations, Haraway's writings propose the new way of relating to technological and biological others by recognizing cyborgs in her *A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late 20th Century* (1991) and companion species in *The Companion Species Manifesto* (2003) and calling for "cross-species sociality". The term "cyborg" is a compound of cybernetic and organism, the concept first introduced by Manfred Clynes in 1960, who posited the cyborg as a hybrid consisting of both biological and mechanical parts. In Haraway's theory, a cyborg is not only a new form of embodiment coming from technical extensions of the biological body but also a new form of consciousness. Cyborg transgresses the categorical ontological dualities not only because it is constituted of two categorically distinguished technological and organic materials, but also because it is a convergence of seemingly distinct elements, which are not actually separate (Sorgner & Hawkins, 2020). As Haraway claims, "there is no fundamental, ontological, separation in our formal knowledge of machine and organism, technical and organic" (Haraway, 1991, p. 178). As a result, Haraway (1991) argues, with the help of technology we can overcome these binaries and be liberated from traditional humanist thought. To avoid deep-rooted oppositions of mind and body, nature and culture, subject and object, which hierarchize one over another, Haraway (2003) introduced neologies such as "naturecultures" which signify the synthesis of culture and nature, acknowledging its interconnected relationship. This way, introducing new categories that do not start from the dualism, the term conceptualizes the

human-nature interface as an interactive site, discontinuing the binary thought. Moreover, Haraway (2003) introduces a notion of "companion species" that describe the interspecies relationship, as all human and nonhuman entities are interdependent and co-evolved together. Companion species show the complexity of our world and the entanglement of the multiple elements working together, even in such seemingly mundane relationships as those between humans and their domesticated pets such as dogs.

Last, a huge part of the posthuman discourse addresses the notion of subjectivity and agency. As Hayles (1999) argues, being posthuman does not mean being a literal cyborg. What defines the posthuman is the construction of a particular kind of subjectivity, rather than interventions on the human body. The posthuman subject is no longer "Man" but a complex assemblage of zoe-logical, geological and technological relational entities. Hayles (1999) states that "the posthuman subject is an amalgam, a collection of heterogeneous components, a material-informational entity whose boundaries undergo continuous construction and reconstruction" (p. 3). Adding to this, Braidotti (2019) asserts, the posthuman subject "relates at the same time to the Earth – land, water, plants, animals, bacteria – and to technological agents – plastic, wires, cells, codes, algorithms […] and the multiple perspectives that inhabit them" (p. 46).

Posthuman theories argue that agency is not something exclusively human and it is not based on the distinction between the conscious self and the other. The traditional notion of agency is comprehended as human, whereas in the posthuman model, agency is allocated between multiple human and nonhuman beings. By emphasizing the agency of that other than human, the notion of agency is reconceptualised, granting the nonhuman entities and matter agency equal to what humans are afforded. By attributing agency to nonhuman entities – animals, nonorganic objects, matter, etc. - it expands the network of social relationships.

2.5. Unstable Media

Drawing on Haraway's thought about the emancipatory promises of technologies to overcome dualities, I further argue for the ability of technology-based arts to reflect on and communicate the abovementioned emergent ideas in creative ways. Next, I will discuss the potential of art that uses technologies to become a tool for envisioning the outcomes of paradigm shifts and help the audience to comprehend them, or even to shape social realities.

There is a body of literature addressing the way technological developments have modified the social and art worlds. Media theoreticians such as Marshall McLuhan (1994), Vilém Flusser (2011), Lev Manovich (2001), and Siegfried Zielinski (2008) have contributed to

the discourse of the interrelation between society, culture and technologies. As Heidegger (1977, p. 12) once said: "technology is a way of revealing". Seeing with technology offers us new, unusual spectatorial positions and helps us understand the world (Heidegger, 1977). Accordingly, art always goes in hand with technological advances (Codreanu, 2015). The development of new visual technologies – such as the invention of the camera, video, digital imagining, virtual and augmented realities – appropriated by new media artists, open up new visual perspectives and allow artists to experiment with traditional narratives and to develop new aesthetics.

Before continuing with the unique characteristics of art, I further establish the term "Unstable Media", which will be used throughout the research. There are a number of competing terms to define technology-based arts. Some terms such as Media Art are broader, reaching all the media from photography to computer-generated imagery; others such as Digital Art refer to the more specific field of digital media. Others include Electronic art, Computer art, and Cyber art (Quaranta, 2014). Artworks that are analysed in this research are close to the term New Media Art as it is defined as "process-oriented, time-based, dynamic, and real-time, participatory, collaborative and performative, modular, variable, generative and customizable art" (Paul, 2008, p. 2). However, V2_ takes a particular approach towards technological art, which it defines as "Unstable Media". Unstable media is based on the intersection of art, science and technology, making use of "electronic waves and frequencies, such as engines, sound, light, video, computers, and so on" (V2_Lab for the Unstable Media, 1987). The instability that is the crucial aspect of these practices here refers to progress, changeability, as it is a force that is "essential to the continuous re-ordering of the social/cultural, political and economic relations in society. Instead of providing us with an orderly, homogeneous worldview, unstable media present an image of a world that is inconsistent, heterogeneous, complex and variable" (V2_Lab for the Unstable Media, n.d.-b).

In this study, I examine the V2_archive of Unstable Media to identify artworks that engage with posthuman themes and present different possibilities for art to communicate posthuman modes of thinking and understanding the world. Drawing on the aforementioned conceptual shifts in the posthuman paradigms, here I discuss unique characteristics of unstable media art that, I argue, present possible ways of communicating posthuman themes and critiques.

First, the reconceptualization of agency in art proposes different ways of seeing. In the mid-twentieth century, McLuhan (1994) wrote about the technological prostheses electronic media offers that are able to change the nature of "Man" (Hayles, 1999), extending human senses and changing the available perspectives on the world. The concept of nonhuman vision,

introduced by media theorist Joanna Zylinska in her book *Nonhuman Photography* (2017), suggests posing the human in a composite assemblage of perception that integrates different organic and machinic agents for functional, political or aesthetic purposes (Zylinska, 2017). The content of the artwork that is available exceptionally with the help of technology suggests the presence of technological agency, allowing viewers to see, hear and experience things that are beyond the scope of human perception, simultaneously recognizing its limits. As Zylinska (2017) states, the non-human vision allows to expand beyond defined boundaries and "poses a challenge to the traditional tenets of the self-focused, capital- and fossil-fuelled, masculinist I, who is supposedly in control of his own vision and (world)view" (p. 8).

Moreover, technologies here are not only used as means to an end. The emergence of new electronic and digital technologies has radically changed the definition of art, widening horizons of creativity and undermining the established notion of "artist". Since the Renaissance, the notion of individual artist was emphasized, until Becker (1982) introduced his idea of art as a collective process. The idea of the solitary creator was undermined, yet changes in the debates around the question of authorship started emerging with the recognition of other than human input to the creative process. The artwork is created in conjunction with the machine forms a cognitive assemblage (Hayles, 2016), where decisions of human and machine affect each other. That is, the distribution of agency becomes one of the key parts which makes these artworks posthuman. What is more, the use of innovative and digital technologies presents the artistic output of technology and creates technology aesthetics that are recently recognized as computational creativity (Besold et al., 2015). As first-ever artwork created by artificial intelligence was sold at a Christie's auction (Quackenbush, 2018, October 26) plenty of literature is dedicated to reflecting on the question "can machines create art?" (Coeckelbergh, 2016). All of this puts the notion of exceptional human creativity into question, which up to this day was seen as uniquely human.

A second major feature of unstable media art is its participatory aspect. The development of new technologies and medium-specific art has allowed for new opportunities to physically engage the audience with the artwork, eliminating the distinction between production and reception (Bishop, 2012). V2_ sees interactivity and participation as crucial aspects: "we don't want passive consumers but critical producers who take an active part in shaping the world around them, and in shaping themselves" (Mulder, 2009). Most of the works in the archive are defined as interactive installations, that is, are designed to be interacted with, exploring new ways of communication, offering an immersive experience that arises in person-environment interaction. Moving beyond passive reception of art, artistic projects engage the audience to

participate and co-create the artwork, creating a space for the intimate and personal encounter with other than human entities. The meaning, thus, is created through the experience. This links with the theory of relational aesthetics, the term coined by Nicolas Bourriaud (1998), which defines the role of artworks to produce a temporary environment, involving viewers to participate in the artwork. "All representation refers to values that can be transported into society […] Art is a state of encounter" (Bourriaud, 1998, p. 18). Relational art tends to be participatory and experiential, prioritizing interaction over passive reception of the artwork, and in this way fosters a sense of connectedness and developing relationships. However, both Bourriaud's introduction to his *Relational Aesthetics* (1998) and Bishop's work on participatory art completely disregard inherent participatory and interactive aspects of new media art (and accordingly, unstable media art). Therefore, as Chatzichristodoulou (2013) states, there emerges a paradox: "media art is, as discussed, inherently participatory, yet media art is excluded from discussions on participation in contemporary art" (p. 306).

These two features lead to the last one: through the use of innovative technologies and involving audiences to participate, artworks develop sensorial experience, stimulating not only visual senses but engaging with other senses. Studies have proved that multisensory, embodied experience create a higher level of emotional involvement and has a greater impact on the overall perception (Vi et al., 2017). All these features, I argue, are crucial for constructing new social realities, making them comprehendible to publics and potentially shifting the existing perceptual regimes. Drawing from a body of existing artworks, this study aims to investigate *how* this might be done.

2.6. Previous Research and Research Question

The attention to artistic practices in relation to the Anthropocene and posthuman turn is increasing in recent years. This is evident from the proliferation of newly published books such as *The World to Come: Art in the Age of the Anthropocene* (2018) and *Posthumanism in Art and Science: A Reader (2021)*. There is also a number of previous research in humanities studies focusing on the aesthetics of the Anthropocene (Davies, 2016; Davis & Turpin, 2015; Taylor, 2018) and posthuman aesthetics (Ferrando, 2016). Other research engage with cyborg art (Borst, 2009), arts and new materialism (Leonard, 2020) and posthuman art (Myers, 2013). Nevertheless, relatively few research efforts have been dedicated to studying artistic practices from an empirical perspective. As mentioned above, the sociology of arts often neglects the part "work" in the "artwork" (Becker et al., 2006). This study contributes to the extension of the field of sociology of arts and the emergence of the "new sociology of art" by taking a look at works of art themselves from a sociological perspective. Moreover, the role of arts is often not completely

understood when thinking about the ways to bring the critical audience attention to the ongoing social and environmental issues; therefore, this research contributes to the understanding of art as an alternative source of knowledge that in creative and experimental ways reaches the audience, potentially shifting their perception. Focusing specifically on unstable media artworks that are not all explicitly engaged with the posthuman turn or social change, this research looks for more subtle and creative ways of engaging with relevant topics, and the possible types of meaning that can be created through the experience with art.

Taking into account the power of arts in constructing and shaping social realities, the need to envision new ontology, and the inherent characteristics of unstable media art, this research focuses on the potential of unstable media art to reshape our collective imagination in relation to the ongoing posthuman turn. The research revolves around the following research question: *Taking V2_'s collection of Unstable Media art as a focus of this study, in what ways can art engage with the themes of the posthuman turn, and how specifically can it help to construct or imagine a social world that includes both human and nonhuman agents and perspectives?*

Drawing on the earlier discussed posthuman narratives, namely the critique of human-centred ideologies, goals to break away from dualistic thinking, expand subjectivity and pluralize perspectives, this thesis anticipate that unstable media art can be particularly effective in bringing these ideas into practice. Through technologies, we constantly re-organize social realities, therefore, unstable media art, I believe, has the potential to redesign our social and cultural environment and create new posthuman principles in society. I expect that unstable media art can be an effective tool for a critique of existing social norms and create opportunities for emancipatory action from the anthropocentric modes of thinking. Through the unique characteristics of unstable media presented above, such as the ability to extend human senses, take a more-than-representational approach, going beyond one way artist-to-audience practice and facilitating direct, individual engagement with the issue, artworks may present nonhuman agency that posthuman thinkers are arguing for and suggest more inclusive social realities.

3. METHODOLOGY

The goal of this research is to heighten awareness of art's social functions and the possible contribution of works of art within a larger narrative of posthuman ontology. In so doing, qualitative content analysis was conducted in order to answer the main research question, which is: *Taking V2_'s collection of Unstable Media art as a focus of this study, how can art engage with the themes of the posthuman turn, and how specifically can it help to construct or imagine a social world that includes both human and nonhuman agents and perspectives?*

This chapter provides an explanation of the employed method for this research and delineates the process of selection, data gathering and analysis of artworks. First, I briefly present the information about the chosen archive as a source of data. After that, I elucidate and justify the chosen method, which is followed by an explanation of the developed sampling instrument for selection criteria. Lastly, I clarify the process of data analysis and coding.

3.1. V2_ Archive

This research investigates works of art from the V2_ Archive, which is a valuable data source for the analysis for several reasons. Firstly, V2_ Archive does not collect artworks themselves but contains a large body of documentation regarding the activities and artworks presented and (co) produced at V2_ for two decades, from 1993 up to this day. Launched in 2003 as an online archive portal, the archive is accessible to the public through the website (www.v2.nl/archive). The archive presents a variety of technology-based, electronic media artworks from international and interdisciplinary artistic projects that fall into the previously introduced name "Unstable Media". Other existing archives (e.g. Rhizome.org; Database of Virtual Art) on the other hand, are more limited as they usually focus on one or several specific media such as video or digital art. Therefore, the accessibility, variety and long period of documentation are the reasons for my data collection choice, suggesting that this collection of works may be representative of larger trends in media art over the last two decades.

Second, the described characteristics of unstable media art are conducive to communicating posthuman ideas. I argue that the use of innovative technologies (allowing to see beyond human perception), interactive approach (creating human to machine, human to animal and human to human encounters), sensorial qualities (stimulating other than visual senses) and its experimental nature in their form and content, provide a unique experience where the viewer can perceive various aspects of social life. All these aspects lead to the main reason stated in the aforementioned manifesto, which goals matched with the overall idea of this study - unstable media art can play the constructive and sometimes revolutionary role in shaping social realities.

Last, the essential aspect of the archive is the specific approach of textual and visual documentation of the artworks. In 2003, V2_ conducted a study looking for the best approach of the documentation strategies of unstable media art activities, emphasizing the process over product. Due to the complex and process-based nature of unstable media art, the documentation and preservation of the artworks are quite challenging. As artistic projects are often a part of long term research or collaboration processes between artists, scientists, technicians and professionals from different disciplines, the artworks evolve in a certain contextual framework that results in a range of public events, publications and other activities. For this reason, the archive does not use the traditional record- and object- based documentation strategy but operates as "a cloud of objects and relations, describing works and actors, events and activities (the organization's history), keywords and themes, as a broad context for the art projects" (Frommé & Fauconnier, 2003b, p. 4). As stated in the V2_ study,

"The archive portal offers a public view on the documentation and context of V2_'s activities from 1993 till present, including people, organizations, artworks and events that have played a role in V2_'s history; documentation includes a collection of about 15,000 photographs and a growing number of digitalized video fragments, in addition to a large number of texts, images and links" (Frommé & Fauconnier, 2003c, p. 1).

The large body of catalogued material in the archive consists of additional information attached, that is, scans of programme booklets, or documentation videos related to the artwork or to the event in which the work was shown, providing more context with which to interpret each work. For example, "an interactive installation is documented with different images, flyers, textual descriptions, video and audio clips or even preparatory technical drawings and manuscripts" (Frommé & Fauconnier, 2003b, pp. 3-4). As the level of detail in this type of documentation might be confusing, the selection is made depending on the perspective of the institution, the relevance, quality and readability of the documentation (Frommé & Fauconnier, 2003b). That is to say, documentation, which is available at the archive, is a result of the selection process performed by the V2_ collective. This sort of analysis of metadata that was systematically constructed by the institution purports to be more objective rather than a first-hand analysis of the artworks, relying only on the very experiential and subjective interpretation of the researcher. In other words, the sensory experience of the artworks and what they mean is not assessed solely by the researcher herself, but rather by a collective of professional curators whose assessments have been documented in the metadata that serves as the primary data accessed by the researcher.

Nevertheless, there are limitations to using existing documentation in the archive as a data source. The amount of data and accessible documentation varied from artwork to artwork; thus besides the information retrieved from the archive, in some cases, I had to look for additional accessible documents on the artwork (artist websites, available interviews, exhibition reviews) which were an integral part of the data collection.

3.2. Qualitative Content Analysis

Artworks can be subjected to both quantitative and qualitative methods of analysis. A number of studies have used quantitative analysis methods to study prevalent patterns in art. However, the theoretical and exploratory character of this research requires qualitative analysis methods. The overall aim of qualitative research is to gain a comprehensive understanding of the characteristics of analysed data, examining the way they relate to existing theory. Analysing relatively new and abstract paradigms that are conceptual rather than explicitly visible, qualitative content analysis is the most suitable.

Although conducting interviews with artists could provide more detailed data focusing on the artist's intent and constructed meaning, this research moves beyond the understanding of the individual artist. One of the main arguments of the posthuman theory is to stress the co-production recognizing the co-constituting input of other agents (creative input of technology, other than human species and the audience), rather than praising an individual artist genius. Instead, it is in line with posthuman arguments to understand a collective practice as constitutive of a social world and shared reality. Thus, I am more interested in the characteristics, affordances, and possible meanings constructed around art objects rather than the artist's stated intentions.

Qualitative content analysis provides the theoretical comprehension of data allowing for a theoretical contribution to the existing literature (Bryman, 2012). It is a flexible and systematic method intended to prevent subjective biases (Schreier, 2012). However, there are no strict universal rules for analysing data in qualitative content analysis (Bryman, 2012). Because of the multiple ways of interpretation, the analysis partly depends on the researcher's subjective insights or intuitive action, raising questions of validity and reliability of findings (Elo & Kyngäs, 2008). Therefore, qualitative content analysis requires a systematic application and clear delineation of the process beforehand, to assure credibility, dependability, transferability, and confirmability (Lincoln & Guba, 1985). Using guidelines drawn from the extensive amount of theory, units of analysis in this research were selected on the basis of predetermined criteria, which are established through the review of the literature and presented below. Data has been systematically collected and carefully contextualised. To provide support for the findings and

overcoming weaknesses of the chosen method, the developed categories were explained through more extensive analysis of artworks and accompanied by textual references, which served as valid indicators. Therefore, the findings of the analysis might be subjective; however, they are systematically and scientifically grounded in concepts and narratives emergent from the analysed data and existing literature (Ward, 2012).

3.3. Operationalization

As the archive contains a large amount of documentation and is not explicitly related to the posthuman discourse, I used a criterion sampling strategy to select 100 units of analysis for the research. Criterion sampling is used for the selection of information-rich cases connected to the topic of the analysis. As there are no methodological guidelines or navigational tools to track the multiple new ways of knowing that emerge from the posthuman approach and technological use, I had to first operationalise the concepts defined in theory. As a result, this study proposes its own approach to identify artworks that contain or address "posthuman" themes. The developed sampling instrument was constructed with recourse to the literature and was used to select artworks that fulfilled at least two of the following criteria:

1) Artworks that involve different actors and non-human agents such as "animals, insects, plants, trees, viruses, fungi, bacteria and technological automata" (Braidotti, 2018, p. 39) and "non-human inorganic agents (plastic, wires, information highways, algorithms, etc.)" (Braidotti, 2018, p. 51);

2) Artworks that create body-machine merger, a cyborg, or in other words, an organic human or animal body enhanced with technology (Haraway, 1991);

3) Artworks that address the relationship between humans and non-humans (animals, insects, plants, trees, viruses, fungi, bacteria and technological automata) and trans-species alliances or companionships (Braidotti, 2018; Haraway, 2003) in other than a hierarchical/superior manner;

4) Artworks that use technologies to create perspectives that go beyond the limits of human perception (allowing to see, hear, experience more than human sensory perception) (Zylinska, 2017);

5) Artworks that explicitly engage discursively (in the introductory text or other verbal metadata) with the Anthropocene or posthuman critiques (looking for keywords such as: posthuman(ism), Anthropocene, cyborg, human-centred);

6) Artworks that are "about" ecological crisis (artworks that address current environmental issues including a visual or verbal narrative or the metaphor in the introductory text of the artwork).

After the selection, the sample enclosed 100 artworks created between 1992 and 2021. Artworks stored in the archive were mostly installations (visual and audiovisual installation, reactive light installation), although the works varied from robotic pieces to interactive performances.

3.4. Coding and Analysis

This section elaborates on the process of creation of the codebook (see Appendix A). As the digital archive provided digital access to the documents, I used ATLAS.ti software to perform the coding. Using the software made the coding process much easier as it allowed me to keep track of the emergent codes. ATLAS.ti is efficient in developing and comparing codes through qualitative notation as well as keeping additional documents and notes that were used for the analysis of works for which the archive's metadata was insufficient.

First, the documents were copied into the software, simultaneously keeping digital notes on the images or video of the artworks. Following the formulated question, analysis consisted of two phases as the research was based on both inductive (theory building) and deductive (theory testing) research strategies.

Coding is utilized to apply themes and notations to the data, revealing the underlying meaning that data presents. I followed the two steps of open and axial coding. During the first step, I read through the available documentation of the artwork, dividing the segments of texts, labelling the pieces of text with descriptive codes. The main components and concepts of the work were defined, focusing on the central theme, the interplay of the components, and sensory mode, asking questions such as: what is the centre of the artwork? What (if so) issues are addressed? How is the relationship between human and nonhuman presented? From whose perspective is the world imagined? What kind of social interaction is created (human to machine, human to human, human to nonhuman)? During the process, a series of descriptive codes were applied to the data. Next, the related available documents and photographs were studied, paying attention to the presentation of the work, how the artwork functioned (e.g., public installation, performance, other activities related to the artwork), studying its participatory aspects and the corresponding interaction.

After completing the first round of coding, the second step was conducting axial coding, which consisted of the process of making connections between the codes and looking for the emerging pattern. Finally, I grouped codes into categories for the codebook, which were: Sound of the Unseen; Nonhuman Perspective; Sentient Plant-Cyborgs; What is a Living Being?; Human-Robot Interaction; Realization of Cyborgs; Encountering Intelligent Machines;

Communicating Ecological Crisis; Artistic Visionary Interventions; Speculating on Future Interspecies Relations. Next, these ten themes were clustered under three major category headings: 1) The Presence of Others, 2) Technologically-Mediated Existence, and 3) Towards a Posthuman Future, which are discussed in the next chapter.

4. FINDINGS

The results of this research are presented here under three headings, namely "The Presence of Others", "Technologically-Mediated Existence", and "Towards a Posthuman Future". Each category is divided into a few sub-categories and supported with the most vivid examples from the data, summarizing in total twenty-three artworks and connecting them to broader theoretical concepts and existing literature.

Before I proceed to the discussion of the findings of this study, I first reflect here on the paradox of categories that emerged during the research. Thinking in categories "is a natural and inevitable tendency of human mind" (Allport, 1954, p. 171), as it allows us to interpret the world more efficiently both in everyday life and academic research. Categorization is a commonly accepted process in the organization of information and the construction of social knowledge (Allport, 1954). However, "do these particular categories add to our understanding of a phenomenon, or do they rather limit by placing boundaries on our thoughts?" (Gullion, 2018, p. 68). Despite many widely recognized benefits, categorization can have negative consequences by "deafening us to all finer discriminations" (Allport, 1954, p. 179).

Posthuman theories highlight the real-world consequences of categorical distinctions between humans and nonhuman others and present an attempt to get rid of the reification of opposing categories, dissolving the major distinction between nature/culture, mind/body, human/animal, and so forth. Yet categorical thinking is not that easily abandoned. Although this research engages with a posthuman approach that seeks to challenge thinking in binaries and to some extent in categories altogether, for the sake of clarity and better understanding for the reader, the findings section is organized in a way that contradicts this. Organized according to three seemingly exclusive themes, the following discussion is designed in a way that is perhaps in conflict with the overall idea of the multi-layered and entangled structures of the posthuman. The first section focuses on the biological or hybrid nonhuman entities – animals, insects, plants and synthetic living forms; the second section introduces created encounters with technological others – robots, human-machine hybrids and artificial intelligence. The last section deals specifically with artistic responses to ecological crisis and concludes with speculations about the posthuman interspecies future. Even though certain sub-categories (e.g. "Realization of Cyborgs"; "Sentient Plant-Cyborgs") represent the attempt to avoid categorical distinctions, it was impossible to completely move beyond binary or categorical thinking, and instead necessary to separate particular discussions from each other according to existing categories (such as animals, technology, and the environment). I hope that

this paradox and the intellectual tension that it produces helps to show how emerging posthuman discourse differs from the existing systems of knowledge and dominant frameworks, even if these existing systems are hard to completely leave behind in the format of an academic thesis.

4.1. The Presence of Others

The large initial category that emerged from the analysis include artworks that, in Deleuze's (1988) words, are trying to "deterritorialize" humans. In particular, artworks are adopting a posthuman perspective by recognizing other biological levels and include them in the creative process. Out of the 100 works analysed, a majority of artistic projects do not focus exclusively on humans but position us in relation to other living beings. Moreover, rather than focusing on pets or companion animals, artworks pursue a more inclusive approach and bring to the fore multiplicity of nonhuman animal life that was previously left on the margins of the art world and humanist ideology in general. Analysed artworks involve fish (*Delicate Balance,* 1995); birds (*Open Cage Radio,* 2019); worms (*Microscopic Opera*, 2011; *Woodworms, Microphone, Sound System*, 2009); insects (*Coexistence*, 2003; *Holodeck for House Crickets*, 2005); fungi and bacteria (*Habitaculos Organicos*, 2015). Many artworks engage with living plants (*Acoustic Mirror_Moss*, 2009; *Action Plant*, 2010; *Bodies of Light*, 2005; *Capillary Gradient*, 2010; *Herbarium Vivum*, 2013; *Herbarium Vivum 2*, 2020-2021; *Life Support Systems*: *Vanda*, 2005; *Neo Nature*, 1993; *Phonosynthesis*, 2014; *Smart Hybrid Forms*, 2020-ongoing; *Symbiotic Transmitter*, 2020-2021; *The Others*, 2012). Furthermore, artworks extend the notion of the living being, asking what is conceived as "natural" and "alive", presenting semi-living beings (*The Small Protein Translation Machine*, 2012), merging natural and artificial materials such as grapevines and electric cables (*The Flock*, 1992), iron crystals growing from the wires (*Roots*, 2007), protocell formations (*Protocell Field*, 2012), or creating responsive environments as "new living organisms" inspired by nature (*4D-Pixel*, 2004; *Liquid Space 6.0*, 2003-2006; *Spawn*, 2014).

Almost all the artworks in this category show more-than-representational approaches, creating direct encounters with nonhuman agents, exposing their unique characteristics and introducing other-than-human agency. Works under this category are divided into four themes, which look more in-depth at the most illustrative examples of how unstable media art engages with realities of nonhuman others. In the first section "Sound of the Unseen", the complexity of biological life is represented by the sounds produced by nonhuman agents. With the specific attention to worms, I analyse works *Woodworms, Microphone, Sound System* (2009) by Zimoun and *Microscopic Opera* (2011) by Matthijs Munnik. The next sub-section "Nonhuman Perspective" takes a look into different forms of life organization and nonhuman

animal intelligence. Particularly focusing on insects, I examine Amy Youngs' work *Holodeck for House Crickets* (2005) that focuses on crickets and Donna Conlon's *Coexistence* (2003) presenting the collective behaviour of ant colonies. The "Sentient Plant-Cyborgs" section focuses on the plant intelligence and the encounter with plants as sentient beings, which unique characteristics are emphasized through their merge with technologies. Here I look at the use of the Mimosa Pudica plant in the works by Natalie Gebert *Symbiotic Transmitter* (2020-2021) and Ivan Henriques *Action Plant* (2010). The works under the last sub-category "What is a Living Being?" present different approaches to identify "life" and encounter artificial beings that are on the border of organic and inorganic. Creating next-generation life forms, analysed artworks question what is natural and unnatural, extending the concept of living organism beyond the realm of human and animal species. Here I discuss works *The Flock* (1992) by Ken Rinaldo and Mark Grossman, *Protocell Field* (2012) by Philip Beesley and *The Small Protein Translation Machine* (2012) by the Tissue Culture & Art Project.

4.1.1. Sound of the Unseen

An installation *Woodworms, Microphone, Sound System* (2009) by Zimoun presents a specific approach to encounter nonhuman others we share our world with. Central to the work is the sound of woodworms eating their way out of the wood, which is picked up and intensified with a microphone (Woodworms, Microphone, Sound System: V2_Archive [1]). The work sheds a light on the invisible natural phenomena, which plays an important role in nature and is an example of how the sound of a small life form, too small to be heard by humans, through technological means are brought into perception. Yet the unique soundscape generated by the interplay of worms on wood sounds a bit odd. In our urbanized society, the human ear is not used to hear these sounds anymore, as the sound of nature is replaced by human-produced noise (Woodworms, Microphone, Sound System: Document A). Being in a space and hearing strikingly rhythmic sounds made in real-time by "hidden" sound-producing animal species, create an acousmatic experience – hearing the sound without visible and identifiable source cause. Acousmatic art makes one focus on the auditory without seeing the originating cause, with the sound becoming a tool to comprehend what is happening in and to the environment, to determine invisible changes and processes in the ecosystem. A sound turns into a rhythm, and although worms do not represent the organizational capabilities as insects such as bees and ants do, the assumed synchronized production of sounds made by a collective work of insect

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[1] For each artwork, I have collected metadata from the documentation of the V2_Archive and in some cases additional documents that depict or describe the work. Here and after I refer to the metadata from the V2_Archive as [Name of artwork]: V2_Archive, and any other supplemental sources of metadata as [Name of artwork]: Document A, Document B, etc. These documents are listed in Appendix B.

community raises a question about their presumable collective logic (Woodworms, Microphone, Sound System: Document B).

Another encounter with worms through sound emerges in an audio-visual installation *Microscopic Opera* (2011) by Matthijs Munnik. The work presents tiny nematodes known as "C. elegans" that, as is usual in scientific research, are visible only through a microscope. The microscopic view of creatures that are less than a millimetre in size is translated in real-time on big screens. In addition to making the invisible seen in other than scientific context, these tiny living beings are given a voice. Using technologies - a scientific tool and software - the simple movement of lab worms under the microscope is translated into synthetic sound, making these creatures music composers performing "an abstract opera piece together" (Microscopic Opera: V2_Archive). Contrary to previously discussed work, the movement of these organisms is influenced and controlled by mutations made by the artist, changing the degree of vibration and temperature. Reacting to the environment worms move differently with each different movement producing a distinct sound, making them performers of the work. It results in a soundscape that bears a resemblance to the human-made opera – which ironically questions the considered fine art form as a part of high human culture.

The sound dimension in these two artworks suggests a new way to look at nonhuman creatures. Even though forests are full of sounds, the sources and agents of these sounds - insects, birds, animals and plants - remain often overlooked (López, 2004). Worms are not the kind of animals one would normally associate with sound, yet it is an example of how technology-based art can reveal hidden connections among seemingly incompatible things. The vision that is often privileged over other senses here is replaced with listening to other than human-made sounds, which is a unique approach to open our eyes to the existence of these tiny living beings and expand our understanding of the environment and natural processes. By coupling two irreconcilable things like worms and sounds, artworks also dissolve traditional dualisms of culture (music) and nature, where natural sounds become a piece of art and worms become artists. The latter opens a new layer to the understanding of these artworks – by bringing nature to the art institution and involving nonhuman agents in the production of art, biological actors enter the cultural realm. Nonhuman animals are recognized as collaborators in the making of the work of art, as both are responsible for the outcome of the artwork. The question of animal agency, therefore, has an impact on the perception of the creative potential of the nonhuman and the conventional meanings of art and artist *per se*. "Artistic agency does not have to be understood as the capacity of some exceptional human genius but rather as a distributive and relational phenomenon. Such an understanding would allow other animals in into the realm of art

as creative agents" (Ullrich, 2019, p. 71). The constituting role of nonhuman actors in the production of art can be understood as a fundamental critique of anthropocentrism.

4.1.2. Nonhuman Perspective

This sub-category further presents often overlooked nonhuman others specifically focusing on insects such as crickets and ants. *Holodeck for House Crickets* (2005) by Amy Youngs is a terrarium, a created artificial natural environment for house crickets. These insects were initially bred in a climate-controlled laboratory space as food for the reptiles without ever having a chance to see their natural habitat. Therefore, simulating a natural setting, the installation provides crickets with a safe constructed environment where they can communicate with each other. While chirping, crickets interact with the interface that changes views on the hologram of outdoor grasslands rendered inside the terrarium. The amplified chirping sounds change the panoramic shooting projected on the glass simulating a motion through the landscape from the cricket's point of view (Holodeck for House Crickets: V2_Archive). The second work, a video *Coexistence* (2003) by Donna Conlon does not involve a direct encounter with the nonhuman other, however, it sends a powerful message about the social life of humans and insects. The artwork features a community of red leaf-cutter ants that transport green leaves to their nests; however, some of them carry artificial, leaf-like pieces of paper, painted as geopolitical symbols - flags of different nation-states and signs of peace (Coexistence: V2_Archive). Reminding about the complex social structures of ants, for which human-made national symbols do not mean anything, Conlon's work allows us to think about the artificiality of constructed conventions of humankind and different possible ways of life organization, thinking in terms of what we can learn from these social systems in relation to ongoing social and political problems.

If our perception of nature was not limited to the animals that are the most similar to us, we would have apprehended the world around us differently. Therefore, taking on a posthuman perspective, these works go beyond the sociological focus on humans and allow us to perceive different social realities. Performing with live crickets, Youngs suggests an unusual and more entertaining way to adopt a nonhuman perspective and recognize motives, modes of expression and actions that are completely different from that of humans. Referring back to Haraway, who emphasizes the need for understanding the world in a non-anthropological way, artworks take into account animal societies and recognize insects as overlooked examples of social forms and politics of organization.

What is more, it is known that aesthetic preferences regarding nonhuman entities keep certain species outside the visual representation. Accordingly, visually unappealing animals

are excluded from ethical treatment (Sherbert, n.d.). Therefore, *Holodeck for House Crickets* (2003) proposes an ideological critique of the exploitation of animals by human scientists and by allowing to see live crickets and adopt their perspective potentially creates a sense of empathy and helps viewers to identify with these living beings more easily. Bees and ants, on the other hand, were already recognized in different fields of media, engineering and design of digital technologies. Arguing that artificial agents do not have to necessarily act like humans, insects serve as a powerful example of organization, distributed intelligence, collective agency and swarming (Parikka, 2010). Therefore, the artwork reminds us that the recognition of nonhuman intelligence and forms of life organisation can also aid with future developments, in which art can play a constitutive role.

4.1.3. Sentient Plant-Cyborg

The next theme that appeared often in the analysed artworks is the recognition of the agency of plants and construction of plant-machine hybrids. In her work *Symbiotic Transmitter* (2020-2021), Natalie Gebert creates a symbiosis between the living plant Mimosa Pudica and the electronic interface. Mimosa Pudica, also known as a sensitive plant, has the ability to develop motoric skills, folding its leaves when stimulated by external triggers (e.g. wind or touch). Its unique shrinking reaction to touch is used in the work to read and mediate further the transmitted signal, which starts to pump the water into the pot of the next plant. The symbiosis between plants and electronic parts form a system, the sequenced action of reading and translating the signal to provide plants with water make all parts rely on each other (Symbiotic Transmitter: V2_Archive).

The Mimosa Pudica plant appears again in the work of Ivan Henriques *Action Plant* (2010). Plants are moving but not in the sense that humans and animals do. Central to the piece is a sensitive plant enhanced with the motor system. A signal amplifier on a customized board of a wheelchair detects the plant's internal signals, and when it is being touched, a plant is able to drive away (Action Plant: V2_Archive). By presenting an interactive bio-machine an artist makes visible the existence of electrical signals circulating inside the plant and enhances intrinsic capabilities of the sentient plant with an ability to move in order to avoid the aggressors (not surprisingly, people, whose actions result in the degradation of biodiversity).

Seeing the invisible processes that occur inside plant cells changes the perception of the plants that are commonly imagined as inanimate objects. Yet the major perceptual change that these artworks create revolves around the question - does it mean that reacting plants have consciousness? What, then, makes plants less than human? Although plants lack central a nervous system, they were recognized as sentient beings that can sense and respond to their

environments. Scientists proved that plants sense different environmental cues (light, chemicals, temperature, sound etc.) and coordinate their behavioural response to the environment by changing their physiological and behavioural traits (Karban, 2015). What is more, they respond to chemicals signals from other plants and communicate with other organisms. In other words, these artworks show that plants are more than stationary passive objects and most important, they are more intelligent than we think.

The assemblage of organic plant and technological device suggests a new hybrid structure, imploding boundaries between the technological and organic. As Braidotti (2010) states, "a combination of organic and inorganic material, inherited and acquired, embodied and technological, lied at the heart of a posthuman system that works by flows, movements and self-organizing entities" (p. 78). The acknowledgement of plant capabilities of cognition, communication and information processing attracted scientists attention in the field of plant neurobiology, but as modern technologies increasingly enter the scientific field today, scientists present incredible results by colliding electronic interfaces with intrinsic biological functions of plants. "Cyborg botany" is a vibrant field of current research, with scientists working on the potentials of the merge of technology and biological organisms. Therefore, the essence of the latter work is not so much in the idea of enhancing the plant that cannot move in a way we do, as plants have their own defensive systems that enable them to protect themselves under a predatory attack. The work is an example of how art can help us to comprehend plant mechanics and to suggest ways to think about the future ways of communication with plants using their intrinsic characteristics and innovative technologies to develop new, non-hierarchical and sustainable human-nature relations. This work becomes only one of the examples of what future possibilities cyborg botany can open and how that will reshape our relationship with plants.

4.1.4. What is a Living Being?

Living things are understood as already discussed living beings – animals, insects and plants; however, the idea of what is alive or natural is very questionable nowadays. We inhabit the world surrounded by genetically altered organisms, animal-technology hybrids and synthetic life forms. How will a natural living being be defined in the future? As classical categories of life start to expand, the notion of life becomes an open question. Taking inspiration from nature and natural processes artworks discussed further in different ways respond to the posthuman ideas of "life".

An interactive installation *The Flock* (1992) by Ken Rinaldo and Mark Grossman is a group of cybernetic sound sculptures consisting of grapevines and electric cables that form jointed wooden robotic arms. The sculptures echo behavioural pattern similar to the flock – a

collective action of birds, fish, insect and other species. The flocking behaviour does not involve the central coordination of individuals, but it requires being aware of one's position and its relation to others. While behaving autonomously, animal species form an interdependent organization acting as one. Embedded with sensors, which function as eyes and ears that recognizes the presence of viewers, the constructed artificial systems perform behaviour analogous to that found in natural groups, moving towards or away from the viewer. When detecting a viewer, the sculptures start to sing through the telephone tones, passing the information about the position of the people in relation to others. This distributed communication among sculptures through sounds allows for learned and cooperated behaviour, which affects the environment being affected by it. Other than mimicking behaviour found in animal species, the "life-like" behaviour of wooden robotic arms that turn towards the direction of the sound they hear resembles the way real grapevines grow. "And have you ever noticed how a grapevine wraps itself around something? It almost has an intelligence of its own" (The Flock: V2_Archive). The similarity of natural and technological and its alliance in constructed living system teach visitors about the recurring characteristics in different forms of life and possible ways to merge them. Moving wooden robotic arms constructed from vines and electric cables seem almost as being alive.

Philip Beesley pushes forward the question around the notion of living things by creating a responsive installation *Protocell Field* (2012). It is a constructed environment organized from protocells – synthetic cells that consist of intelligent microprocessors, that mimics natural life processes. The sentient artificial environment constructed from pulsing LED lights, designed and inspired by nature is thought-controlled through electronic interfaces - headsets worn by the visitors. Presented in a form of a chapel-like canopy, the sentient installation equipped with sensors responds to visitors' presence which makes it "alive" (Protocell Field: V2_Archive). "Beesley creates spaces that dissolve into forest-like hovering fields, kin to primitive life-forms within dense jungles and ocean reefs" (Protocell Field: Document A).

The Small Protein Translation Machine (2012) by the Tissue Culture & Art Project presents an in vitro experiment performed with cells that grow cultured meat inside a microgravity bioreactor. Borrowing techniques from the scientific field, authors use biotechnology to create so-called semi-living artworks and keeping semi-living forms alive in an art space (Mitchell, 2015). Framed into the cultural sphere, the work of the Tissue Culture & Art Project investigates the use of tissue culture as a medium of artistic expression by creating "a new class of objects/beings" from living and non-living materials (The Small Protein Translation

Machine: V2_Archive). Installing the bioreactor in the art space the artists expose the process of bioengineering performed in laboratories and introduce the audience to the new types of life.

Both *The Flock* and *Protocell Field* take natural processes found in animals and plants as an inspiration presenting the similarity of actions and characteristics that constitute different life forms. The immersive and interactive nature of artworks creates a space to contemplate the conceptual line between animate and inanimate as well as certain established moral perspectives towards others. As Beesley states in the interview (Protocell Field: Document B), rather than putting boundaries around this fragile forest-like environment, making it a non-touch place as humans would normally do, visitors have a chance to generate a sense of environment through touch and direct encounter. This way they can discover limits and develop a sense of care and nurturing, probing new relationships with the world and new forms of life.

The Small Protein Translation Machine prompts us to rethink our relationship with other living beings in two ways. First, the work operates as an entry point for the discussion about the ethical framework set for our behaviour toward nonhuman animals. The recognition of animals as co-habitants of the world on a theoretical level raise the question about human conduct to others – the exploitation of animals. Tissue engineering for food suggests an applicable and tangible example of how we can change the current practices relating to food production. Cultured meat involves practices in the promising emerging field of cellular agriculture that explores the opportunities and benefits of tissue engineering to the production of food. This way the art world becomes a sphere to raise all the rhetorical questions about ethics, norms and values that emerge from newly acquired scientific knowledge. On the other hand, Mitchell (2015) makes a great point asking, do gallery visitors bear the responsibility towards the living entities they encounter in the artwork? The artistic inquiry of using bioengineered entities as a creative medium, in this case, is to reflect on the emerging discourses of growing new, so-called semi-living life forms that further complicates the understanding of life, with which we may risk making a new class of exploitable life forms (Zurr, 2008).

Overall, the category "The Presence of Others" shows how unstable media art responds to the posthuman turn in relocating the focus outside of ourselves by positioning humans among the myriad other living beings. These artistic endeavours refer to a posthuman theory that goes beyond the human ways of knowing, arguing that we should look for new forms of subjectivity that is not limited to human (Braidotti, 2013). Artworks under this category allow to recognize multiple agents that constitute our world, from tiny creatures and sentient plants to new semi-live forms and represent the characteristics, actions and agency of animals and nature that otherwise remain invisible, inaudible and imperceptible. Rather than presenting animals and

plants carrying a symbolic meaning, artworks demonstrate their unique abilities simultaneously revealing limitations of human capacities. By giving voice to silenced perspectives and presenting the realities of nonhuman others, artists take a post-anthropocentric perspective "in the sense that it does not consider the human to be the dominant or the most important species, nor does it see the world as arranged solely for human use and benefit" (Zylinska, 2014, p. 20). Artworks position humans in relation to others by and accepting them as fellow others, which is exactly what posthumanist theorists are arguing for.

Moreover, responding to the need for reassessment of our toxic relationship to other living beings, unstable media art becomes a platform to directly encounter others through different visual, sonic, and sensual experiences, potentially evoking emotions, elicit empathy and stimulating to adopt new values. Finally, by recognizing animal and plant intelligence artworks question the exceptionalism of human, undermining humanistic conceptions. By including animals, plants and other (living) beings into the creative process, nonhuman beings are seen as a force of creativity extending the notion of the artist to the next level and challenging the division of biological beings from the cultural sphere. This way unstable media art contributes to the broader idea that the distinction between nature and culture is unreasonable.

4.2. Technologically-Mediated Existence

The second largest category that emerged from the analysis includes works that in different ways reflect on the human relationship with technologies and technological nonhuman others. Although all the works of art in the archive have technological aspects by definition, certain projects approach technologies not only as of the means or medium of an artwork but as itself a central theme or topic. The role of innovative technologies in restructuring our social realities is being recognized, thus art calls for our attention to think about shifting human relationship with technological forms in our technologically-driven world. All the artworks frame technological presence in a unique light, although all of them help us unpack common assumptions about the human-machine relationship creating a direct physical encounter with technologies that result in a range of visual and sensual experiences. Some of the works involved a direct human-robot interactions (*Adelbrecht*, 1988-2000; *Espace Vectoriel*, 1993; *Knife.Hand.Chop.Bot*, 2007; *Mobi*, 2006; *Spatial Sounds (100dB at 100km/h)*, 2000-2001; *Terrain_01*, 1994), others engaged with the viewers' sensoria through prosthetic devices (*3RD*, 2014; *B-hind*, 2020; *MARS Bag*, 1998; *Sniffing Others*, 2012; *USB Organs*, 2010; *Prosthetic X*, 2019-; *Whisper*, 2002). The large number of works engaged with artificial intelligence (*Choose How You Feel; You Have Seven Options*, 2016; *In the Company of Bots*, 2016; *Kurort,* 2004;

Machines that Judge Us, 2018; *Neuro Kid "Mic"*, 1995; *TeleAgriCulture_Rhizomatic Bias*, 2019; *The Superstitious Fund Project*, 2012).

This general category encompasses three sub-categories, each of which presents different approaches to technological other. In the first section "Human-Robot Interaction", I discuss works that deal with robotics, specifically *The Blind Robot* (2012) by Louis-Philippe Demers and *The Bar Bot* (2004) by Time's Up. The second sub-section "Realization of Cyborgs" focuses on works that further reconceptualise human relationship with technological other by means of human-machine interfaces and body-technology convergence. Here I discuss two works *The DareDroid* (2010) by The Modern Nomads and *A Cryptanalysis of the Foreign Body Language* (2017) by Yuping Hsu. The last sub-section is called "Encountering Intelligent Machines" where I analyse works that focus on the abilities and dangers of artificial intelligence, namely *Agent Ruby* (2002) by Lynn Hershman Leeson and *Machines that Judge Us* (2018) by Boris Kourtoukov.

4.2.1. Human-Robot Interaction

Contrary to the earlier discussed work *The Flock* that was an example of soft robotics (created using natural materials), in the work by Louis-Philippe Demers called *The Blind Robot* (2012) the technological arm with an articulated hand is transforming a cold mechanic tool into a fragile instrument by its behaviour rather than used materials. Central to the piece is an intimate encounter with the robotic arm that recalls the movements of a blind person by touching the face of the visitor sitting in front of it. Rather than presenting robots as flawless machines, the "blindness" of the robot might be understood as a kind of imperfection, a human trait that is distant from perfectly structured machines. Humanising the technology and giving the robot human-like capacities the author turns the soulless machine into a fragile, perceptual agent. In this piece, the robot gently touches a visitor's face with its fingertips and learns the human features. Through this intimate, nonverbal encounter the work encourages emotional involvement in the subject, potentially transforming the perception of robots as cold, soulless and dangerous machines. Nevertheless, the context of this physical experience plays a huge role here. Encountering with a robot in an art space and knowing that the "blind" robot is going to touch a person to learn his/her features differs from the perception of the robots performing different tasks in the medical spaces (The Blind Robot: V2_Archive).

However, at this point, robots are still perceived as tools to serve people. Well-known Asimov's laws (1942) that apply to the robots are similar to those applicable to humans, excerpt the one referring to the absence of the free will, stating that robots shall obey human orders. Yet what would happen if one day robots would stop serving people and started serving

themselves? The idea of technology as an autonomous force operating on its own is rather frightening. Yet this question is raised in the work *The Bar Bot* (2004) by Time's Up in a more humorous and playful way. Putting this thought into an experiment an artist creates an example of an intelligent social robot that acts driven by self-interest. *The Bar Bot* is a robot bartender – an automated robot waiter that acts similarly to a human – it has vision, moves, interacts with people, but most importantly, it is motivated by its own agenda and pursues its own goals. Equipped with a camera eye, it recognizes a human standing nearby and asks for money. After calculating how much change it has received, the robot spends gathered money to buy itself a beer (The Bar Bot: V2_Archive).

Robots are growing in presence in our everyday life. Instead of being used only in industrial environments, robotic machines are encountered in medical institutions, they serve as learning assistants and agents giving care to the elderly (Sparrow & Sparrow, 2006). However, we still perceive technologies as the new form of otherness as our common fear-driven perceptions of robots are highly constrained by utopian/dystopian dialectics (Cave et al., 2018). This holds true particularly when robots are associated with fictional representations of dangerous and soulless machines that are seen as an existential threat to humanity (Bostrom, 2002). These two artworks are illustrative examples of two different ways in which artists approached our relationship with machines going beyond the utopian/dystopian narratives. While both create a direct encounter with a robot, with the machine softly touching a person's face *The Blind Robot* must evoke unusual senses. Through the intimate experience that directly engages with sense-perception, the artwork may elicit emotions linking them with new cultural and social values. This, in turn, might make us think about the other possible relations between human and robots, as for example, the presence of robots as companions to humans in our likely posthuman future. *The Bar Bot*, on the other hand, represents the ability of art to reflect on concerns of scientists and the public in general in a more creative and playful way. Robots are considered to perform socially acceptable behaviour. This rather humorous idea of a robot trying to get money for its own drink and to buy as much beer as possible presents the idea in different colours. Today scientists are working on developing robotic emotional intelligence and self-awareness. The social role of artificial agents in the human world is starting to change, thus art becomes a space to imagine and think about ways in which it might affect our existing social relations. The artwork makes us reflect on how we want to engage with self-aware technologies, what ethics should be considered and what impact it would have on the future human-machine relationship.

4.2.2. Realization of Cyborgs

A work by the design team The Modern Nomads called *The DareDroid* (2010) is a wearable biomechanical cocktail making dress built into the human body that presents itself in a performative act of the "truth or dare" game. Using built-in sensors the cocktail robot integrated into the bartender's body recognizes the presence of others and deactivates if someone is too close to the bartender. Yet if one remains within the safe distance, the dress dispenses a non-alcoholic drink. The interaction process starts with the robot inviting a viewer to play the "truth or dare" game on the touch-based phone, and after the player reveals some personal information, the technology decides if one will be rewarded with a cocktail (The DareDroid: V2_Archive).

Another work that invites visitors to take part in the performance and have a first-hand encounter with the technology is the work *A Cryptanalysis of the Foreign Body Language* (2017) by Yuping Hsu. In this performative piece, visitors wear a prosthetic that allows them to feel "electrical stimulation patterns on the tongue" (A Cryptanalysis of the Foreign Body Language: V2_Archive). While feeling these patterns, the brain recognizes them as information of the artist's physiological or emotional changes. That is to say, using a device connected to the tongue, humans could be trained to learn new patterns and acquire a new skill to read the emotions of others.

Enhancing human bodies with wearable or smart devices, these artworks present new kind of embodiments that can be perceived as concrete expressions of cyborg configurations. In the age of rapid advances, human capabilities are constantly aided with technologies, disrupting dualistic opposition between human subject and machine and narrowing the distance between them. Marshall McLuhan in his notorious work saw technologies as "extensions of man" allowing to question the inherent will to "separate man from "his" technologies" (Zylinska, 2002, p. 2). The fact that we will coexist with technological beings in the near future is undeniable, but the salient line between the human and machine keeps blurring. When machines are constantly being anthropomorphized and humans are technomorphized, art is trying to answer the main question: what does it mean to be human in the first place? Referring to Haraway's theorizations in her manifesto, the contribution of art to the discussion of the future of human bodies is the artistic realization of cyborgs. As Ann Weinstone states: "the cyborg is perhaps the exemplary figure of posthumanism" (2004, p. 5). But how we imagine those cyborgs and what role do they have in our social reality?

Distancing from the current cyborg fantasies in science fiction movies, artists bring ideas to life by creating new kind of embodiments that are adapted to real-life situations. Medical technology, customised hardware and a human work together in *The DareDroid* can be

understood as becoming of a cyborg - it is this human-machine subjectivity Haraway is arguing for. Rather than encountering a cyborg, *A Cryptanalysis of the Foreign Body Language* creates a temporary experience allowing visitors to temporarily become cyborgs themselves. This work not only resembles the notion of cyborg, augmenting the human body with technological devices but also explore and offer completely new senses that allow hearing with the tongue (A Cryptanalysis of the Foreign Body Language: Document A). The experience of feeling patterns on the tongue creates an intimate experience with the technology, where everyone can feel what it could mean to be human in a posthuman future.

However, analysed artistic projects that aim to enhance the human condition with technological extensions highlighted that there is a very thin line between posthumanism and transhumanism. While these two concepts are interrelated, aiming to dissolve boundaries between human and machine, they respond to changing notions of "human" in contrasting ways. The difference between posthumanism and transhumanism is that the latter still holds a human-centric perspective. Transhumanism focuses on humans and their development, saying that the current form of the human species is not the end of human evolution. Enhancing the body with technology As Max More defines it is the "intellectual and cultural movement that affirms the possibility and desirability of fundamentally improving the human condition through applied reason, especially by developing and making widely available technologies to eliminate ageing and to greatly enhance human intellectual, physical, and psychological capacities" (More & Vita-More, 2013). This suggests we are not moving from human-centred thinking, although the traditional understanding of human is redefined.

4.2.3. Encountering Intelligent Machines

The work *Agent Ruby* (2002) by Lynn Hershman Leeson introduces the artificially intelligent Web agent. Initially coded by an artist, Agent Ruby is a chat-bot - an identity with a human face that resembles a woman character, existing in a virtual world. Visitors can chat with Agent Ruby through a website by sending her messages and receiving responses. The ongoing communication builds on the agent's identity, as it is not any more dependent on the creator. The agent is constantly learning through the social interaction with people, using web users' messages as data, remembering conversations and constantly evolving, simultaneously acquiring emotional skills. However, at some point, visitors notice limitations of technology - Agent Ruby does not always have an answer to asked question or replies in a way that leads to miscommunication. Sometimes Agent Ruby responds: "I'd need a more powerful algorithm to answer you". Thus the author is asking, "are we encountering here the limits of the technology or those imposed by the artist herself?" (Agent Ruby: Document A).

The work of Boris Kourtoukov *Machines that Judge Us* (2018) explores algorithmic machine logic revealing biased and unethical decisions made by nonhuman agents. The piece consists of several small machines that observe viewers in space and start a conversation about the chosen person in the space. Machines then make judgements based on visitor's appearance, deciding if they will make use of a person or try to get rid of him/her (Machines that Judge Us: V2_Archive). The visible unethical behaviour of machines exposes the nature of algorithms and the problems inherent in algorithmic systems that keep making invalid decisions.

Both works highlight the fact that technological intelligence does not end with robots and machine-like technologies. While above discussed technological agents were rooted in the real world, following human-machine interactions happen in both physical reality and cyberspace. Not that long ago, the notion of intelligence was confronted with artificial intelligence (AI) and machine learning, as artificial agents became increasingly integrated into our social world. While *Agent Ruby* shows the capacities of artificial intelligence, *Machines that Judge Us* express concerns about the potential dangers of intelligent machines.

The more we communicate with robots and AI, the more comfortable relationship we can develop with them (Suzuki et al., 2015). Analysed works are examples of art being a platform to enforce AI education, enhance AI ethics and foster empathy between AI and its users (Srinivasan & Uchino, 2021). Although today's social environments are permeated with autonomous digital agents and artificial intelligence internet character does not surprise us anymore, created in 2002, an online experience of chatting with a replica of a woman face embodied in the screen must have had a different effect on the visitors. The representation of AI as a woman character is making it less distinct from humans, so does it allow to develop an empathetic behaviour to a certain degree. Today, the representation of artificial intelligence in art, film and literature continue to anthropomorphize artificial intelligence. To think about inclusive posthuman reality, we need to think about the advance of AI as "the rise of new "persons" with complex identities and diverse forms of wisdom" (Bloom, 2020, p. 23). This, in turn, makes us again rethink values and norms that we apply to humans and nonhuman others and the fact that soon we will have to reorganize our social order (Lindermann, 2015).

Machines that Judge Us, on the other hand, reflects on the opposite side of the development of AI. Technologies are assumed to be objective, used to eliminate possible human biases. However, there are many examples of bias generated by algorithmic systems. Recruitment algorithms, facial recognition software, algorithmic decisions made in healthcare, all of them to a certain degree exhibit discrimination and continue to reinforce social prejudices

entrenched in our societies (Ntoutsi et al., 2020). However, the majority of people do not understand how certain decisions are being made. Algorithmic systems need to be transparent and accountable, just as human decisions are explainable, so have to be ones made by algorithms. Art thus becomes a way to make visible systematic problems embedded in technology and think about other inherent biases of technology creators. By giving machines a human voice, allowing them in a real-time judge visitors, the work may allow for a deeper understanding of unseen processes going on inside technologies. In this sense, art is capable to talk about both the potential and the possible dangers of the further development of artificial intelligence.

The "Technologically-Mediated Existence" category demonstrates how unstable media art embraces technologies as a part of our social reality, representing them as intelligent agents. Going beyond dystopian/utopian narratives, artists at the same time humanize technological other, eliminating distinctions between human and nonhuman while simultaneously representing unique capacities of intelligent machines that exceed human abilities. In the age of rapid technological developments, unstable media art becomes a space for unique self-other interaction with robots and artificial intelligence, potentially eroding technophobia and suggesting new ways for future human-technology relationships. Furthermore, by merging the human body with technological interfaces artworks break down the separation between human and machine, realizing the concept of cyborg. Providing a glimpse into the posthuman future, artworks envision the future human body augmented with auxiliary organs, speculating on the future understanding of human *per se*.

4.3. Towards a Posthuman Future

Now that we have recognized the complexity of biological and technological nonhuman others through artworks, the last category presents artistic attempts to portray our posthuman ecology. After all, what could a posthuman world possibly look like? Finding possible points of entry, artworks operate as an application of conceptual shift in practical terms. This category is the most diverse as it includes artistic practices that in different ways contribute to the creation of a posthuman future taking non-anthropocentric environmental and ethical positions. Artworks either take a posthuman perspective by responding to current environmental issues giving tangible representations of ecological crisis (*Oil Compass*, 2011) or in creative ways communicate consequences of human action on animals (*Bird Boxes: Lost Singers*, 2020; *DIS_TURBATION*, 2020; *Entangling Territories*, 2020; *Interference 53°N,42°E - v2.0*, 2020). Other works in this category suggest more sustainable solutions (*Ambio*, 2014; *Creating Rural Energy*, 2012; *Micro-Nutrient Couture*, 2010; *Mycoremediating Biodegradable Closed*

Ecological System, 2015*; Re-Cycles*, 2017; *The Iron Ring Project*, 2013; *The World in a Shell*, 2010) and present open-source projects (*Protei*, 2009). Other works reflect on the future interspecies relations (*Deep Limb Sensation*, 2006; *Ever it Takes*, 2020; *Prototypes for Hermit Crab Shells*, 2001; *The Mushroom Death Suit*, 2008; *Utility Pets*, 2004) and more experimental ideas for the future such as using microorganisms as currency (*Bacterial Money*, 2014).

The first sub-section of this category is called "Communicating Ecological Crisis". It involves environmentally-concerned art practices which focus on our ecological systems that have undergone irreversible changes, specifically a work by Marylou Petot *Bird Boxes: Lost Singers* (2020), *Interference 53°N,42°E - v2.0* (2020) by Sandipath Nath and Nikzad Arabshahi and *Oil Compass* (2011) by Sey Min and Kasia Molga. The second sub-category called "Artistic Visionary Interventions" discusses the projects *Protei* (2011), *The Iron Ring Project* (2013) by Cecila Jonsson and *The World in a Shell* (2010) by Hans Kalliwoda that suggest an alternative, artistic solutions to combat environmental issues. The works in the last sub-section "Speculating on Future Interspecies Relationships" present a posthuman approach to the human-animal relationship and imagine new possible interrelations between humans and other species, taking as an example work of Jae Rhim Lee *The Mushroom Death Suit* (2008) and *Ever it Takes* (2020) by Jacco Borggreve.

4.3.1. Communicating Ecological Crisis

A sound installation by Marylou Petot *Bird Boxes: Lost Singers* (2020) is an example of acoustic ecology, focusing on the disappearing sonic heritage of ecosystems and sounds of endangered species. Recordings of sounds of at-risk bird species shed a light on the significant issue of our natural environments becoming less vocal. The work is contradictory in the way it shows how the use of technologies by humans is destroying the environment, while simultaneously can contribute to its preservation. Technology reduces the biotic diversity of the world but without it, we would not be able to record, preserve and listen to the remnants of natural soundscapes. The artist translates bird songs to a tangible work of art in visual and acoustic form, preserving traces of a vanishing world. The endeavour to highlight the threat to the natural world makes art practices a distinct form of environmental activism. The work aims to engage visitors emotionally and to acknowledge that in the near future these sounds will irreversibly disappear.

A work by Sandipath Nath and Nikzad Arabshahi *Interference 53°N,42°E - v2.0* (2020) presents a different kind of sonic experience, that of the underwater world. The marine ecosystem is rich of sounds, however, marine animals are plagued by considerable noise of human activity. This work determines human-made underwater noise pollution in the North Sea.

The name of the work *Interference 53°N,42°E* refers to the exact location where the underwater noise data was collected within the period of two years. The work presents an immersive audio-visual environment where real-time visual image rendered on the large projectors and a soundscape create a three-dimensional sound field of marine bioacoustics and recorded noise. Being in an immersive environment visitors can experience the human-induced noise that underwater animals live through every day (Interference 53°N,42°E: V2_Archive). Combining innovative technologies and creativity, the work opens a window into the underwater world and allows one to experience inaccessible aspects of the environment from the perspective of marine species and perhaps to critically think about the current ecological situation.

Another prevalent approach was the use of data visualisation to communicate environmental issues. *Oil Compass* (2011) by Sey Min and Kasia Molga is an interactive, constantly evolving installation informing visitors about the oil spills in oceans. Converging real-time data and past records of oil spills on water, this work is designed to inform visitors about the current positions of oil tankers and their actions on the ocean, based on which, predicting the next oil disaster and envisioning long term consequences on the ocean and coastlines (Oil Compass: V2_Archive). Through the exhibited screens, visitors can navigate through affected areas and discover real-time data of marine traffic, oil and radioactive spills. Monitoring data and updating the map with the information, the work is constantly evolving. Scientific data mediated by artists that show detrimental actions happening at the moment underlines the urgency for environmental actions and allows viewers that are immersed in both visual and interactive experience.

Throughout the study, I discussed works that focused on the need to rethink our relationships with different nonhuman others. Artistic projects in this category reflect on the consequences of our human-centred view of the world and specifically the detrimental consequences on nature and biodiversity. Analysed examples aim to trigger ecological awareness by connecting art, science and social participation and to sharpen human sensitivity to decaying natural environment. Operating as a channel of communication to address the ecological crisis, art has an educative role by bringing environmental issues into cultural spaces and public conversation. Analysed artworks shine a light on environmental degradation in more engaging rather than traditional ways, creating immersive, sonic and tactical experiences; accordingly, visitors must be more receptive when prefaced with information that engages emotionally and aesthetically. This goes in line with an earlier discussed approach developed by Bentz (2020) about how climate change can be communicated in, with and through art.

4.3.2. Artistic Visionary Interventions

The project *Protei* (2011) initiated by Cesar Harada consists of low-cost sailing drones developed to collect oil spills. Current oil spill skimming technologies, floating containment booms that are used to clean and protect areas from oil spills are inefficient as they are highly expensive, carrying a health risk for humans and able to clean only three percent of oil (Yeaton, 2011). *Protei*, on the contrary, is low-cost and more efficient as it is manufactured from green materials, using renewable energy and operating under different weather conditions, the autonomous, unmanned pollution collecting robots are using the power of nature to remediate a man-made problem (Protei: Document A). The developed design can be used for other purposes in the future, such as collecting other chemical pollutants, plastic garbage and toxic substances (Protei: V2_ Archive).

As disclaimed by the *Protei* team, the project is not based on academic or scientific research, it is rather a response to the environmental crisis (Protei: Document B). The team uses innovative technologies to construct designs that are easily implemented into practice, providing with immediate results. The important part of the project is the open-source approach. Creating a community of members that share their ideas and are willing to participate in the further development of the project, makes this practice a collaborative action increasing the functionality of the designed work. The information about DIY floating drones is documented and publicly available online. The accessibility of knowledge, as well as the need of ultra-low-cost materials, makes DIY sailing robots available solutions for individual use. However, the success of the project relies on its implementation on a larger scale and calls for a collective, widespread effort of people that would create a network of sailing drones cleaning the sea.

Another example, *The Iron Ring Project* (2013) by Cecila Jonsson draws connections between art, science and technology and functions on few different levels. First, the work sheds a light on the consequence of the mining of metals that result in toxic levels of metal releases into the environment, adding to the global dialogue on the environmental crisis. Yet the project suggests an ecological approach to benefit from contaminated mining grounds. The artist presents a possibility to make use of hyper-accumulating plants growing on destructed lands that are tolerant to iron and store inorganic metals inside them (The Iron Ring Project: V2_Archive). Utilizing the often overlooked ability of plants to accumulate iron, the projects provides the solution to remediate contaminated mining fields. As a result, the artist creates a 2-gram iron ring mineralizing the 24kg of harvested contaminated grass from open-pit mines in Brazil. Turning collected material into a jewellery piece, the artwork suggests alternative ways of the iron mining and production of jewellery. By subverting the process and turning pollution into products, the

work makes us think about the possible collaborations between art and science to restore disturbed lands. Finally, this work also addresses the interdependency and collective work of species to overcome ecological issues. While hyper-accumulating plants store metals and are able to grow on contaminated mining grounds, for them to clean up the soil, first they need to be harvested, which implies human contribution to the process (The Iron Ring Project: V2_Archive).

While artists are advocating for more sustainable actions, the art world creates a paradox of sustainability. Art fairs, temporary exhibitions generate a great amount of green gases, as well as a considerable amount of energy and resource use (Shen, 2012). Hans Kalliwoda in his project *The World in a Shell* (2010) reflects on how art and art-science collaborations can be sustainable themselves, presenting an alternative to unsustainable (art) practices. The work is a design solution - a living and working unit that can be applied in real life and re-produced on a larger scale. It is a high-tech, self-sufficient, mobile shell-shaped container, equipped with advanced, sustainable technologies. The work is an example of modern nomadism, suggesting a solution for a more sustainable space, which does not cause harm to the environment. It is a sea container converted to a mobile space that can sustain in different harsh environments – from deserts to extreme cold terrains (The World in a Shell: V2_Archive). This dwelling system is an example of the use of innovative technologies having very little impact on the environment; it works independently from local energy sources as it generates its own electricity using wind and solar energy; it recycles the water waste and it is constructed from the weight-saving materials and can be transported by any kind of transportation. This nomadic working unit can be used as an artistic laboratory or as an autonomous space holding different range of events, workshops and exhibitions. Constructed in a form of a shell, echoing natural shapes, this work is also called *Polliniferoused Container*. Inspired by nature, almost like collecting and carrying pollen, the travelling container allows for cultural exchange, gathering knowledge from local inhabitants and transmits it further. After the construction of the container, it travelled around the world stopping at UNESCO heritage sites with an exhibition and series of lectures about ecology and sustainability (The World in a Shell: V2_Archive).

Embracing values of sustainability artworks facilitate sustainable actions synthetizing art, science and technology. In their practices, artists develop concrete sustainable solutions identifying potentialities of nature and possibilities of innovative technologies. Artists concerned about ecology, being free of disciplinary constraints, have freedom for open exploration. By "thinking outside the box" and suggesting non-standard approaches that are suitable to apply and realize in real-life, enact new pathways to action, co-producing solutions

that can be integrated into real life building a more sustainable future. Although it goes without saying that artistic environmental solutions could only create change when are deployed on a large scale, analysed artworks propose solutions that are easily reproducible and available for a broader public.

4.3.3. Speculating on Future Interspecies Relations

The Mushroom Death Suit (2008) by Jae Rhim Lee is a part of the artist's *Infinity Burial Project* proposing to use mushrooms for decomposing human corpses. The created suit of fungi is an eco-friendly burial alternative making the burial process greener. The suit made out of organic cotton consisting of mushroom mycelium and microorganisms removes toxins, pollutants, preservatives, heavy metals and pesticides that are contained in human bodies (The Mushroom Death Suit: V2_Archive). Another work is the installation and performance *Ever it Takes* (2020) Jacco Borggreve, in which he is taking care of developing lizard embryos. As reptilian eggshell is semi-permeable, nutrients and oxygen can pass through allowing for the development of the animal. With the goal of hatching the egg, an artist spends months nurturing eggs, using his own body to provide the energy, nutrients and moisture to seven dragon eggs (Ever it Takes: V2_Archive). Using technologies he provides with all the necessary components for the development of the animal and thinking of future interrelationship focusing on the notion of care.

The artworks under this category could appear in the first category named "The Presence of Others" yet they do more than representing the existence of other species and the diversity of our ecological system. These artworks suggest possibilities of co-existence that are not embedded in hierarchical power structures, responding to Haraway's thought "to be one is always to become with many" (Haraway, 2008, p. 4). Introducing imaginative posthuman possibilities artists create radical visionaries of human intra-action with other species (Barad, 2003). These two illustrative examples present the human body as a place for the posthuman encounter, engendering new assemblages between humans and nonhuman others. They shape versions of the future using entities that fall outside the realm of our personal experience to imagine the possible co-evolution of humans with other forms of life. Presenting a possible co-affecting relations with other species the work of Jae Rhim Lee explores the symbiosis between the fungal and the human. The interest in organic matter and especially fungi and mycelia as a subject and artistic medium is increasingly growing in recent years. In posthuman worldview mushrooms and mycelia are recognized as agents and co-habitants of the world. The dead body becomes compost for a fungus that is trained to partially remediate toxins from human bodies. The artist is training fungi using her own body tissues and body waste creating a sort of

mycohuman relationship. This form of inter-connectedness of the human body and fungal mycelium refers to Barad's (2003) notion of "intra-action" allowing for intra-activity of human and nonhuman bodies.

Ever it Takes is also an example of interconnectivity and interdependency. Embryonic development of living beings depends on the nutrients sourced from the mother, thus creating a direct connection between the human body and developing lizards, Borggreve echoes Haraway's (2016) notion of kinship and "companion species" and creates a futuristic interspecies entanglement. This responds to Haraway's idea of articulating care as means of making kin. The notion of kin making for Haraway means making persons, which are not necessarily humans and tied by ancestry or genealogy (Haraway, 2016). In this sense, the work exemplifies the tangible practice of care through the nurturing ritual, which is crucial for the development of the animal. Displacing the centrality of the human and acting in favour of other than human animal makes posthuman concerns about interspecies connection result in the creation of new relationalities. Human and nonhuman bodies collide into posthuman becoming which "forces us to reconfigure and "reterritorialize" the human within a volatile mix of agencies, beings and forces, where the human is only one among a multiplicity of agents who are active in determining and enacting out (human or not) future possibilities" (Braidotti & Hlavajova, 2018, p. 294).

Taking everything into consideration, the category "Towards a Posthuman Future" brings potential posthuman future into the present. As Zylinska (2002) notices, even if the future remains unpredictable, it provokes attempts to "foresee, envision and perform it" (p. 4). By critically reflecting on detrimental human actions, suggesting possible pathways for a more sustainable future, developing experimental visions of possible social systems and structures, artists translate posthuman narratives into more tangible forms. The posthuman future created by artists is environmentally aware, grounded in the sense of sustainability, ensuring responsible and sustainable actions that meet the need of both humans and nonhuman others. Rather than perceiving nature as having an instrumental value for humanity, artworks represent the environment, which is valuable in its own rights. Unlike the previous two categories, artworks in this category turn back to humans, reflecting on our current and future actions. What is more, artists suggest intertwined and interdependent ways of coexistence in the future, responding to the notion of "kin" and "intra-action". The potential of this kind of art hence lies in the production of new possible symbiotic relationships between human and nonhuman bodies, paving the way for the non-hierarchical understanding of our relationship with others and shaping our collective fantasies about the possible posthuman realities.

5. CONCLUSION

5.1. General Conclusions

As increasing ecological pressures require a renewed approach to nature and nonhuman-others, the aim of this research was to look for ways in which art creates new social realities in relation to the ongoing posthuman turn. The primary focus of this study was on the artistic practices that fall under the category of unstable media. This study has looked at ways in which unstable media art question and deconstruct traditional anthropocentric beliefs and what potential role art plays in shaping human-nonhuman relations, particularly that with animals, plants and artificial intelligence. This was done focusing directly on art through the analysis of specific artworks from the digital V2_ archive, guided by a research question: *Taking V2_'s collection of Unstable Media art as a focus of this study, in what ways can art engage with the themes of the posthuman turn, and how specifically can it help to construct or imagine a social world that includes both human and nonhuman agents and perspectives*?

Using the qualitative content analysis method the study analysed an array of art pieces and more extensively discussed twenty-three works of art throughout the study, looking for the application of posthuman thought within the works of selected examples. Since art is not often explored area in sociological research, this research was an attempt to contribute to the ongoing debates from the perspective of empirical research. As the potential of individual works is often overlooked in art sociology, this study contributed to the emerging field of the so-called new sociology of arts, enriching the discussion of the social role of arts and presenting it as a site to modify social relations. In general, the study has found overlooked ways to increase public awareness of the current ecological and social issues through art. Another inference drawn from this study is that art is able not only to address the current issues but to challenge existing power structures by proposing different environmental, social and cultural futures, where relations between human and the environment are redefined. Specifically, presenting nonhuman others as co-habitants of our world and framing human-nonhuman relations and ecological crisis in social discourse, art can have an impact on our collective imagination actions that are undertaken towards the environment. These conclusions were made based on the several inferences drawn from the study that are discussed below.

Three major themes were developed that form the basis for structuring of findings of this study. As the title of this paper indicates, each of them in a certain way goes beyond the human. The key assertion of this study is that unstable media art takes a posthuman perspective by moving the human away from the centre of inquiry, making visible the mix of biological agencies and forces that inhabit our world. By recognizing animals, worms, insects, plants and

other "living" beings in the creative process and bringing them to the cultural sphere, artworks focus our attention on the often overlooked forms of life. Representing others not as a metaphor but by giving them a voice, art recognizes the existence of other forms of intelligence and their creative potential, rejecting human exceptionalism and instrumentalism. Creating both direct and indirect encounters with animals and insects as conscious agents, plants as sentient beings and seemingly inanimate materials as new forms of life, unstable media art allows us to learn about other, not exclusively human ways to perceive the world. Using technologies to uncover different nonhuman forms of action, communication and life organisation, unstable media art exposes us to other realities, which we can learn from. As a matter of course calling for human attention to other than human species will not necessarily facilitate the interest in the well-being of others, yet abolishing the separation between society and nature and dislocating the human in favour of other biological beings, might be seen as the first step towards building a new social reality that includes all living beings. Moreover, the human domination of nature can be understood as similar to the way the Western world behaved towards other civilizations that have a different outlook on the world. Reshaping the vision of nature is not only changing our relationship with the world but also with each other.

Secondly, unstable media art responds to the posthuman turn by reflecting on the presence of robotic technologies and artificial intelligence. Going beyond dystopian/utopian narratives and understanding technologies beyond mere tools and apparatuses created to serve people, through intimate and thought-provoking encounters, unstable media art brings us closer to robots that can become our companions in near future and proposes a symbiotic relationship with technologies rather than hierarchical. Moreover, unstable media art reflects on the presence of artificial intelligence representing the abilities and limits of intelligent machines that surround us. Reconstructing our perception of technologies, artworks undermine the traditional understanding of being human. Presenting the human body coupled with technological materials, unstable media art predicts the realisation of cyborgs and challenges the humanistic opposition between human and machine.

Finally, given the information collected, unstable media art actualizes the posthuman future in the present, proposing a posthuman condition that is ecologically aware. Using its unique characteristics, unstable media explicitly engages with current ecological crises and consequences of detrimental human behaviour on nature, activating a sense of care for the environment. By using innovative technologies and engaging with the audiences it can play a paramount role in increasing environmental awareness in a way that scholars and scientists cannot. Bringing attention back to humans, unstable media arises as a critical space to dwell

about the detrimental human actions towards nature, providing sustainable, available and applicable on the larger scale solutions to mitigate climate change. Artists take an educative function and solution building by embracing sustainable designs and imagining future interspecies relations as interrelated and interdependent. Presenting new kinship systems between humans and other beings unstable media art suggests possible ways of coexisting that can be understood as the posthuman mode of life.

All the discussed ways in which unstable media art engages with the posthuman turn shows the ability of art to provide us with alternative visions and potentially reshape our collective imaginations. These findings prove and illustrate the promising potential of art in suggesting new ways to perceive animals, plants, technologies and the environment, deconstructing traditional anthropocentric beliefs and going beyond dualistic thinking. Art can become a place for the encounter with nonhuman others, envision often inaudible, invisible and inconceivable aspects of our world. Thus, this study shows how creative approaches that result in immersive, multisensory experience can be an alternative way of responding to the ongoing environmental and social crises, leading to a more promising future.

5.2. Challenges, Limitations, and Directions for Future Research

There were certain challenges and benefits of approaching a topic like this using social science research. As discussed at the beginning of the results section, the challenge of this research was to expose meaning through categories. Social theory methodologically upholds categorical thinking, while posthuman stresses convergence, undoes dualisms and tries to go beyond binary thinking. The research revealed a paradox and inappropriateness of the existing traditional methods in regard to shifting paradigms. The confluence of elements that constitute the posthuman made it difficult to distinguish and assign works to certain categories, as works often presented overlapping topics. This was a proof of the limitations of traditional research methods regarding shifting paradigms that tend to include more than human agents and go beyond the traditional categorization process.

This study, on the other hand, presents a new fruitful way of connecting theoretical ideas with empirical evidence. Although addressing such a broad and philosophical topic through the means of empirical research required a very structured approach for analysing the data, the research has successfully proved that art can envision these elusive aspects of knowledge, which can be sometimes too difficult to comprehend. Moreover, this research has provided a deeper insight into the potential of art to bring posthuman critiques to the public debate.

Compared to other possible methods of analysis, the chosen qualitative content analysis was an appropriate method, as the flexibility of this method allowed for a broad interpretation; however, the absence of the strict systematic rules resulted in a considerable number of codes. Although the research analysed the number of 100 artworks, which is a sufficient amount to draw the conclusions, the study solely focused on the works collected in one specific archive. Thus, the limitation of this research is that it relies heavily on the practice of the V2_ space itself, as analysed artworks are tightly connected to the exhibitions and events the institution organises. Moreover, although the digital archive stores a great number of works, the available data depends on how actively the institution is collecting and updating the archive. A suggestion for further research, therefore, could be an analysis of a broader range of artworks, which are not limited to the activity of one institution. The developed theoretical sampling instrument could be used as a springboard for the search of relevant works from other sources, and the findings may serve as an indicator for the experience one could look for.

This study, however, may serve as a starting point for conducting a different type of research. As this research focuses specifically on the artworks themselves, future research could study the intentions of artists, especially focusing on authors of the environmentally concerned projects and their proposed sustainable solutions. Moreover, the theoretical framework and findings of this study can be considered as a backbone for further research to analyse the actual impact of these artworks on the audience and the perception of visitors that encountered analysed artworks. Approaching the topic from standpoint of the audience that had a first-hand experience could yield more interesting data. Finally, new research about the changing notion of artist, the creative potential of nonhuman beings and the practice of bringing nature to cultural space might be also an interesting topic for another type of research.

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APPENDICES

APPENDIX A

Codebook of selected works

Category	Sub-category	Axial coding	Open coding	Example of text	Artwork
The Presence of Others	Sound of the Unseen	Using animals in art; Making animals co-producers of art; Centralizing other species; Recognizing other biological agents through sound; Giving animals a voice; Questioning the creative potential of nonhuman agents;	Woodworms; Sound made by animals; Making audible invisible natural processes; Animal agency; Acousmatic experience; Natural phenomena; Performance of animals;	"In *Woodworms, Microphone, Sound System*, worms eat their way through a piece of wood lying on the floor of a closed room. Their eating is amplified, creating an immersive sound. The work audifies the worms' digging of a network of tunnels through the wood, a process invisible to the audience"	"Woodworms, Microphone, Sound System" (2009)
			Labworms; Encountering labworms in non-scientific context; Worms as performers; More-than-representational approach; Sonic experience; Coupling music and nature;	"In this installation the movement of the worms is translated into sound in real time [...] different movements of the mutants will produce different sounds, enabling them to perform an abstract opera piece together"	"Microscopic Opera" (2011)

Nonhuman Perspective	Centralizing other species; Recognizing insect agency; Showing communication of nonhuman species; Unveiling nonhuman social forms of life organization;	Using crickets as a medium; Seeing world from the cricket's point of view; Criticizing exploitation of animals in science;	"Through the use of a computer interface, the crickets are able to "interact" with their projected environment by chirping. Each chirp advances the panoramic, cricket-eye-view video footage of outdoor scenery"	"Holodeck for House Crickets" (2005)
		Introducing ants; Insect intelligence; Nonhuman social forms of life organization; Ant collective agency; Communication of nonhuman species; Learning from nonhuman species;	"Ant colonies are a classic example -- strictly regimented societies with a kind of collective intelligence produced in the interaction between the simply functioning ants […] They do not work together any differently, nor do they fight. Is this a take on the self-organization literature? Perhaps not. Rather, it is about the subtle discrepancy between the ants' collective behaviour and the flags, signs of ideologies from the human world that look somewhat absurd here"	"Coexistence" (2003)
Sentient Plant-	Recognizing intelligence of	Merging electronics with	"The Symbiotic Transmitter is a hybrid	"Symbiotic Transmitter"

Cyborgs	plants; Creating a plant-machine hybrid; Representing plants as sentient beings; Presenting invisible natural processes; Suggesting ways of nature/technology convergence; Bringing nature to cultural space	plants; Plant behavioural responses; Using plant inherent abilities; Presenting invisible natural processes;	structure of interacting electronics and plants that enacts a speculative communication apparatus by pursuing the transmission of a signal […] Signals are transmitted through the plant-machine hybrid using the motoric reactions of a mimosa pudica"	(2020-2021)
		Merging plant with technology; Envisioning plant's internal signals; Creating a direct encounter; Agency of plants;	"A plant is provided with an off-the-shelf motor system. The potential of the plant to sense when it is being touched is used to set the motor in action. By doing so, the plant is able to speedily drive away in response to human touch"	"Action Plant" (2010)
What is a Living Being?	Questioning the notion of living being; Introducing to potential new life forms; Dissolving boundaries between natural and artificial	Merging natural and technological materials; Hybrid life forms; Dissolving boundaries between natural and artificial; Mimicking natural processes; Intelligent creatures; Dissolving	"The arms that combine the vines with colourful electric cables, infra-red sensors and small speakers, almost seem intelligent creatures. "What we have here is, in effect, a robot group consciousness. Mark and I made these robots to create artificial herd behaviour. They look for and turn to every sound	"The Flock" (1992)

			boundaries between animate/inanimate;	they hear. And they communicate by keeping each other informed through telephone tones"	
			Creating „living" environment; Questioning the notion of living being; Experiential encounter; Synthetic life forms; Dissolving boundaries between animate/inanimate; Next-generation intelligence	"It's an immersive, interactive environment that moves and breathes around its viewers, creating an environment that can 'feel' and 'care'. In his work, Beesley conducts research into the next-generation artificial intelligence, synthetic biology and interactive technology that have the power to create the dominant aesthetic of 21stcentury landscapes"	"Protocell Field" (2012)
			Introducing to new forms of life; Questioning the notion of living being; Growing semi-living forms outside the laboratory;	"*The Small Protein Translation Machine* features a piece of in vitro meat growing in a microgravity bioreactor […] The Tissue Culture & Art Project (TC&A) investigates our relationship to different grades of life through the construction/growth of a new class of object/being: the Semi-Living"	"The Small Protein Translation Machine" (2012)
Technolo	Human-	Rethinking relation	Intimate	"The robotic arm	"The Blind

gically-Mediated Existence	Robot Interaction	between human and technology; Creating an encounter with robots; Anthropomorphizing technologies; Presenting intelligent robots;	encounter with technology; Changing perception of robots; Anthropomorphizing technologies; Tactical experience; Rethinking relations between human and technological agents;	equipped with an articulated hand, will delicately explore the body of the visitor – mostly the face - in a manner that recalls what blind humans do to recognize a person or an object. The robot arm transforms from a high precision tool into a fragile, imprecise and emotionally loaded agent"	Robot" (2012)
			Egoistic robot; Imagining self-aware robots; Thinking about the social role of robots; Creating a playful encounter with robot; Anthropomorphizing robots;	"The Bar Bot is equally egotistical. Driven by self-interest, it will do anything it can to get money for beer. Its goal, however, is not to quench our thirst, but get as much beer as possible inside itself. But to do this it depends on others. Open communication becomes vital, for only through social interaction can it get its hands on a beer. The Bar Bot may be the most human robot ever built"	"The Bar Bot" (2004)
	Realization of Cyborgs	Realization of cyborgs;	Creating body-technology	"The *Dare*Droid is a biomechanic cocktail	"The *Dare*Droid"

	Fusing human body with technology; Technologically-mediated experience	convergence; Violating human/machine distinction; Interaction with cyborg; Collective work of human and technology;	making dress that uses medical technology, customised hardware and human temperament to provide you with a freshly made cocktail. The human host and robotic dress work together to provide you with a cocktail"	(2010)
		Enhancing human body; Extending human senses; Body-machine union; Using prosthetics; Becoming a cyborg; Intimate experience;	"Audience members are invited to wear a head restraint incorporating a tongue circuit board that enables them to feel the artist's physiological or emotional changes as electrical stimulation patterns on the tongue […] demonstrates the intimacy of body-machine unions"	"A Cryptanalysis of the Foreign Body Language" (2017)
Encountering Intelligent Machines	Introducing AI; Recognizing limits of AI; Direct encounter with intelligent machines;	Machine learning; Intelligent artificial agent; Interaction with the machine; AI developing identity; Anthropomorphising technologies;	"…artificially intelligent Web Agent, who develops her persona by meeting with and reflecting on chatters. Visitors to the website can engage Agent Ruby in a direct online dialogue or download and install her on the desktop of a PC, Mac or	"Agent Ruby" (2002)

				Palmtop. Being a seductive multi-platform 'chat bot', just like in the film Teknolust, she is looking to make contact, chatting up visitors, remembering their questions, their names and, eventually, even recognizing their voices."	
			Technological agency; The role of technology in society; Consequences of algorithmic bias; Presenting invisible processes; Creating an encounter with technologies;	"Through audible dialogue Machines that Judge Us aims to manifest the thought process within tracking and policing algorithms […] This creates the unfortunate situation where algorithms make consistently, and with false confidence, invalid decisions about and on behalf of their users. As these decisions are being made invisibly and by non-human agents…"	"Machines that Judge Us" (2018)
Towards a Posthuman Future	Communicating Ecological Crisis	Presenting invisible environmental changes; Recognizing destructive human actions on nature;	Highlighting the reducing biodiversity; Preserving voices of disappearing species; Raising ecological awareness;	"The project *Bird Boxes: Lost Singers* sheds light on the need for awareness for these lost singers […] Throughout the installation the audience will experience these recordings and the sound library of many	"Bird Boxes: Lost Singers" (2020)

				Creating sonic experience	endangered birds"	
				Underwater noise pollution; Human-induced noise; Experience of animals; Consequences of human actions; Taking on animal perspective;	"Using recordings made near the shores of Texel, Interference 53°N,42°E aims to produce indicative data for mapping the distribution and directionality of continuous underwater noise in the North Sea […]As visitors interact with the installation, their movement data is fed into a custom ambisonic sound engine which creates a three dimensional sound field based on spherical harmonic expansions of the field […] the installation makes an appeal to create an embodied feeling of the noise pollution marine animals experience everyday"	"Interference 53°N,42°E - v2.0" (2020)
				Destructive human behaviour on nature; Visualising sea pollution; Recognizing environmental issues;	"...visually conceptualize long-term consequences on the whole planet and human kind. Visitors are invited to navigate through the major areas affected by oil spills around the globe through	"Oil Compass" (2011)

		Alternative way to present data;	the interactive installation of screens to explore the diversity of the problem"	
Artistic Visionary Interventions	Responding to ecological crisis; Designing sustainable solutions; Suggesting alternative ways to cope with environmental issues; Creating non-standard approaches;	Collecting pollution; Low-cost solutions; Creative design; Remediating environment;	*Protei* as a fleet of pollution collecting sailing drones, is using existing technologies in an innovative design we can implement on the short term to address the crisis. We are developing a low-cost open-source oil collecting device that semi-autonomously sails upwind, intercepting oil sheens going downwind. The design of protei is meant to be hurricane-ready, self-righting, inflatable, unbreakable, cheap and easy to manufacture for immediate response"	"Protei" (2011)
		Caring for the environment; Suggesting alternative solutions; Using plants; Remediating environment;	"Where 'green mining' aims for a more ecological approach to mining metals, The Iron Ring explores how contaminated mining grounds can benefit from the mining of metals for jewellery. In The Iron Ring scenario 24kg of iron-	"The Iron Ring Project" (2013)

			contaminated grass are removed from polluted mining grounds and transformed into a ring of 2g metallic iron"	
		Echoing natural shapes; Designing sustainable solutions; Not harming the environment;	*The World in a Shell* is a high-tech, self-sufficient container that functions as a mobile laboratory and living unit. The container can be folded out into a large shell-shaped construction in which exhibitions, presentations and workshops can be held [...] The project is a model of sustainability and spreads the message that the most advanced technologies can be used without harming the environment or disturbing a community's way of life"	"The World in a Shell" (2010)
Speculating on Future Interspecies Relations	Imagining posthuman future; Creating new interspecies connections; Using human body as an interface;	Acknowledging abilities of fungi; Recognizing nonhuman agents; Creating new interspecies connections; Using human	"*The Infinity Burial Suit* facilitates the decomposition and toxin remediation of corpses by using mushrooms (the *Infinity Mushroom*) which are trained to digest human tissue	"The Mushroom Death Suit" (2008)

			body as an interface; Creating human-animal intra-action;	[...]Lee is training these fungi to consume her own body tissue and excretions (skin, hair, nails, blood, bone, fat, tears, urine, feces and sweat)"	
			Creating new interspecies connections; Taking care; Making kin; Interspecies parenthood; Using human body as an interface; Creating human-animal intra-action; Showing possible future ways of co-existence;	"The installation consists of a lab setting that establishes the connection between the artist body and an incubator holding lizard eggs. The mechanisms in the lab allow the artist's biological matter to contribute as nutrients, as molecules that have passed through his body for the development of the lizard embryo […] This intimacy can be regarded as a birthing ritual resulting in a unique kind of interspecies parenthood"	"Ever it Takes" (2020)

APPENDIX B

List of artworks

1. 5VOLTCORE. (2007). *Knife.Hand.Chop.Bot*.
   V2_Archive entry: https://v2.nl/archive/works/knife-hand-chop-bot

2. Adam, N. (2014). *Reverie.*
   V2_Archive entry: https://v2.nl/archive/works/reverie-imaginary-connections

3. Baecker, R. (2007). *Rechnender Raum*.
   V2_Archive entry: https://v2.nl/archive/works/rechnender-raum

4. Beesley, P. (2012). *Protocell Field*.
   V2_Archive entry: https://v2.nl/archive/works/protocell-field
   Document A: https://v2.nl/archive/people/philip-beesley
   Document B: https://vimeo.com/46879304 (Interview with Philip Beesley during DEAF2012)

5. Borggreve, J. (2020). *Ever it Takes*.
   V2_Archive entry: https://v2.nl/archive/works/ever-it-takes

6. Brotas, A. (2019). *Umbrella Practices*.
   V2_Archive entry: https://v2.nl/archive/works/umbrella-practices

7. Bugge, M. (2017). *Soundtrack for Webcams*.
   V2_Archive entry: https://v2.nl/archive/works/soundtrack-for-webcams

8. Caccavale, E. (2004). *Utility Pets*.
   V2_Archive entry: https://v2.nl/archive/works/utility-pets

9. Chung, S. T. (2012). *The Superstitious Fund Project*.
   V2_Archive entry: https://v2.nl/archive/works/a-superstitious-fund-project

10. Cillari, S. (2005). *Vain in Transit. Digital Creature*.
    V2_Archive entry: https://v2.nl/archive/works/vain-in-transit.-digital-creature

11. Cochior, C. (2016). *In The Company of Bots*.
    V2_Archive entry: https://v2.nl/archive/works/in-the-company-of-bots

12. Code31. (2007). *SE/30.*
    V2_Archive entry: https://v2.nl/archive/works/se-30

13. Conlon, D. (2003). *Coexistence*.
    V2_Archive entry: https://v2.nl/archive/works/coexistence

14. Cortex. (1996). *Sense:less*.
    V2_Archive entry: https://v2.nl/archive/works/sense-less

15. Crane, E. (2010). *Micro-Nutrient Couture*.

    V2_Archive entry: https://v2.nl/archive/works/micro-nutrient-couture

16. De Boer, J. (2010). *Capillary Gradient*.

    V2_Archive entry: https://v2.nl/archive/works/capillary-gradient

17. De Buyser, D. (2009). *Acoustic Mirror_Moss*.

    V2_Archive entry: https://v2.nl/archive/works/acoustic-mirror_moss

18. De Nijs, M. & van der Heide, E. (2000-2001). *Spatial Sounds (100dB at 100km/h)*.

    V2_Archive entry: https://v2.nl/archive/works/spatial-sounds

19. De Nijs, M. (2001/2004). *Run Motherfucker Run*.

    V2_Archive entry: https://v2.nl/archive/works/run-motherfucker-run

20. De Nijs, M. (2006-2007). *Exercise in Immersion 4*.

    V2_Archive entry: https://v2.nl/lab/projects/exercise-in-immersion-4

21. De Paulis, D. (2019). *Open Cage Radio*.

    V2_Archive entry: https://v2.nl/archive/works/open-cage-radio

22. De Wilde, F. (2009-). *Numer1cal Recipe Series [NRS]*.

    V2_Archive entry: https://v2.nl/archive/works/nrs

23. Demer, L. P. (2012). *The Blind Robot*.

    V2_Archive entry: https://v2.nl/archive/works/the-blind-robot-1

24. Demers & Vorn. (1993). *Espace Vectoriel*.

    V2_Archive entry: https://v2.nl/archive/works/espace-vectoriel

25. Dožić, T. (2017). *Re-Cycles*.

    V2_Archive entry: https://v2.nl/archive/works/re-cycles

26. Driessens & Verstappen. (2013). *Herbarium Vivum*.

    V2_Archive entry: https://v2.nl/archive/works/herbarium-vivum

27. Driessens & Verstappen. (2020-2021). *Herbarium Vivum 2*.

    V2_Archive entry: https://v2.nl/archive/works/herbarium-vivum-2

28. Driessens & Verstappen. (2019). *Pareidolia*.

    V2_Archive entry: https://v2.nl/archive/works/pareidolia

29. Fleming, K. (2014). *Endless Species/Endless Forms: Explorations in an Evolutionary Development Park*.

    V2_Archive entry: https://v2.nl/archive/works/endless-species-endless-forms-explorations-in-an-evolutionary-development-park

30. Gabriel, U. & O'Kane, B. (1994). *Terrain_01*.

    V2_Archive entry: https://v2.nl/archive/works/terrain_01

31. Gebert, N. (2020-2021). *Symbiotic Transmitter*.
    V2_Archive entry: https://v2.nl/archive/works/symbiotic-transmitter

32. Gonçalves, F. R. (2020). DIS_TURBATION.
    V2_Archive entry: https://v2.nl/archive/works/dis_turbation

33. Harada, C. (2011). *Protei*.
    V2_Archive entry: https://v2.nl/archive/works/protei
    Document A: http://protei.org/download/20110802protei-press-release.pdf (Press Release)
    Document B: https://issuu.com/cesarharada/docs/protei-handbook-a4 (*Protei* Handbook)

34. Henriques, I. (2010). *Action Plant*.
    V2_Archive entry: https://v2.nl/archive/works/action-plant

35. Herczka, M. (2005). *Life Support Systems: Vanda*.
    V2_Archive entry: https://v2.nl/archive/works/vanda

36. Hershman, L. (2002). *Agent Ruby*.
    V2_Archive entry: https://v2.nl/archive/works/agent-ruby-com
    Document A: https://www.fondation-langlois.org/html/e/page.php?NumPage=167

37. Hertz, G. (2003). *Experiments in Galvanism*.
    V2_Archive entry: https://v2.nl/archive/works/experiments-in-galvanism

38. Hsu, Y. (2017). *A Cryptanalysis of the Foreign Body Language*.
    V2_Archive entry: https://v2.nl/archive/works/a-cryptanalysis-of-the-foreign-body-language
    Document B: https://vimeo.com/256438181

39. Humeau, M. (2011). *Back, Here Below, Formidable*.
    V2_Archive entry: https://v2.nl/archive/works/back-here-below-formidable

40. Hurtl, M. (2020). *Drowning in Æther*.
    V2_Archive entry: https://v2.nl/archive/works/drowning-in-aether

41. Jonsson, C. (2013). *The Iron Ring Project*.
    V2_Archive entry: https://v2.nl/archive/works/the-ring-1

42. Juehui, W. (2010). *USB Organs*.
    V2_Archive entry: https://v2.nl/archive/works/usb-organs

43. Kalliwoda, H. (2010). *The World in a Shell*.
    V2_Archive entry: https://v2.nl/archive/works/polliniferoused-container-the-world-in-a-shell

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