IMAGINATIVE ECOLOGIES

Inspiring Change through the Humanities

Edited by
Diana Villanueva-Romero,
Lorraine Kerslake, and Carmen Flys-Junquera

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Contents

Figures

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INTRODUCTION

Imaginative Ecologies: Inspiring Change through the Humanities

Diana Villanueva-Romero, Lorraine Kerslake and Carmen Flys-Junquera

> Perhaps that old pair of antagonists, science and poetry, can be persuaded to lie down together and be generative after all (107).
>
> WILLIAM RUECKERT

• • •

> Everything is connected to everything else (35).
>
> BARRY COMMONER

⁘

This book[1] has been a long-term project, one that has undergone many transformations since its origins, which date back to 2015 when a group of Spanish researchers from various fields—environmental ethics, arts and ecology, ecocriticism and literature—joined forces thanks to funding granted through a research scheme of the Spanish Ministry of Economy and Competitiveness. The title of this project, *Environmental Humanities. Strategies for Ecological Empathy and the Transition Towards Sustainable Societies*,[2] tried to capture what was then a bold attempt in many ways, particularly in Spain. Not only did this project aspire to introduce a fairly new discipline in Spain, but it did so from a highly interdisciplinary stand by gathering a collection of perspec-

1 This work was partly supported by Proyectos I+D+I Grupos de Investigación Emergentes, Conselleria de Innovación, Universidades, Ciencia y Sociedad Digital, Generalitat Valenciana. Grant Number GV /2020/029.

2 "Environmental Humanities. Strategies for Ecological Empathy and the Transition towards Sustainable Societies"; Subproject 2: "Stories for Change" HAR2015-67472-C2-2-R (MINECO/FEDER).

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tives from environmental ethics, arts, and ecocriticism and by paying attention to the need to understand the contributions of visual and literary cultures in promoting social change through the activation of empathy towards the environment using imagination as a tool. Such perspective acquired momentum after the celebration of the first International Conference on Environmental Humanities held at the University of Alcalá in 2018 under the title *Stories, Myths, and Arts to Envision a Change* in which a variety of practitioners from these different disciplines collaborated in what was an effort to create a space for disciplinary conversation and exchange.

The inspiring premise of these initiatives was that artistic works are themselves like cultural ecosystems,[3] creating awareness and interrelating ideas, visual and verbal linkages mixed with thought, values and traditions and lifestyles. In this book we take on the role of artistic works—visual cultures and literature—that promote environmental awareness through the exercise of the imagination and the analysis of these imaginative ecologies. Thus, 'imaginative ecologies' can be defined as ecologies of the mind moved by the affective connection between the writer/artist and the natureculture s/he is engaged with during the creative process of acknowledging the call of the more-than-human in an anthropocenic world where boundaries are built between the 'us' and the 'other.' Imaginative ecologies can pave the way for creative encounters of affective knowledge between these polarities so as to make possible the type of reconciliation needed in order to overcome the perils brought about by the nonsensical detachment embedded in today's turbo-capitalism.

The "texts" represented in this book all create, in one manner or another, spaces of empathy and awareness, and foster more sustainable attitudes and practices, hoping to kindle emotion. In this sense, we are inspired by the affective turn which has taken place in the humanities and the social sciences since the mid-1990's (Athanasiou, Hantzaroula, and Yannakopoulos 5) and firmly believe in the need for literary and artistic work to be informed by "embodiment and environmental situatedness" (Weik von Mossner 6) if it wants to be generative of change. That is why this book tries to show that the response to the ecological crisis expressed in the multiplicity of phenomena that haunt

3 In "Art and the Ecosystem," Patrick Kangas also uses the word 'ecosystem' in relation with art, but his approach is focused on analyzing the artistic form of ecological models used by ecologists to represent ecosystems. Equally interesting is Pedro Alves da Veiga's formulation of "a new media art ecosystem model" in reference to his analysis of the ways in which different agents and their relationships influence the creation of a framework that can either facilitate or hinder the success of artistic projects. Here, however, the word 'ecosystem' is used in a metaphorical sense, as a way to suggest that the creative imagination is made of different forces that interact among themselves and with the outside world in producing a work of art.

the future of planet Earth—global warming, water pollution, deforestation, biodiversity loss, etc.—does not necessarily have to come exclusively from the sciences, which always seem to opt for a detached, rational comprehension of the pressing questions of today's world. It can also arise from collaboration between arts and sciences, a methodology that, as it has already been acknowledged (Kueffer, Lässer, and Hall 2017; Kueffer et al. 2018), characterizes what has come to be known as environmental humanities. For this reason, this book gives voice to the practice of intellectuals, writers and artists from different nationalities who see themselves as participants of a global conversation on the role literature and the arts can play as facilitators of the type of social and cultural change needed in what Steffen, Crutzen and McNeill (2005) refer to as Stage 3 of the Anthropocene, a stage in which we can either continue doing business as usual or become the solution (619).

The truth is that it is not enough to simply understand the workings, for instance, of a complex process like climate change, for its rational apprehension does not mean we will commit ourselves to stopping it. What reaches our minds must necessarily move our hearts at some point in order to impel us towards the consecution of significant, long-lasting change. The scientific model is based on observation, description, testing and hypothesizing among other things. Writers and artists are experts in bringing us to our senses because they work through the muscle of empathy. They also observe and describe, test the reception of their work by their audience, and even hypothesize when they dare to create worlds of fantasy to make us see ourselves in another way, reconfigure who we are and what we represent in this world. Writers and artists are also scientists but of a subtler kind. Both groups are philosophers of the human soul trying to establish in their doings a relationship with the more-than-human world in which we all are interdependent.

This affinity between the sciences and the arts as two interlocked epistemologies is further stressed by tracing the history of the term "scientist." Stefan Collini indicates in a reprint of C. P. Snow's famous text on the cultural division into arts and sciences that "the term scientist was first proposed in 1834 along the lines of artists" (qtd. in Roberts 5). He explains that: "The lack of a single term to describe 'students of the knowledge of the material world' had bothered meetings of the British Association for the Advancement of Science in the early 1830s, at one of which 'some ingenious gentleman proposed that, by analogy with artist, they might form scientist.'" (qtd. in Roberts 5).

The contact zone between arts and science resonates in the conversations contained in this book as the expression of a long-lasting dialogue of the inquiring human mind with nature. Perhaps our brains need more than objective knowledge in order to formulate alternatives and understand the marrow

of the problems that affect us every day. Interestingly, environmental activism often finds a loyal ally in writers and artists all over the world. Such alliance is underlined by Donna Haraway in her work on the Chthulucene where she highlights the effectiveness of science art projects like the Crochet Coral Reef project[4] to become "a case of multispecies becoming-with, a model system in which scientists, artists, ordinary members of communities, and nonhuman beings become enfolded in each other's projects, in each other's lives" (M35).

From this co-working of disciplines, it could be inferred that the meticulous and methodical work of scientists who dissect problems in order to efficiently formulate solutions is not enough. Literature and the arts in their multiple, peculiar enactments create *imaginative ecologies* in the sense that they translate into imaginings "the interrelationship of organisms and their environments."[5] The use of the word ecologies in the title of this volume serves to emphasize the webs of the relationships implicit in the different ways of knowing and experiencing the natural world. These ecologies are sustained by the human imagination, that potent generator of possibilities.

Thus, the term 'imaginative ecologies' is an expression that refers to the products of our imagination, those imaginings produced in our interaction with the non-human other. They are understood as the object of exploration of environmental humanists—historians, literary scholars, anthropologists, sociologists, philosophers, etc.—who perceive the need to explore the human imagination in its multifarious expression to recognize how humans negotiate their belonging to systems of naturecultures. As Brian Boyd points out, as social beings that we are, the arts appeal to our species preferences, regardless of the modifications by each local culture. Stories, he claims, "foster our ability to [...] imagine possible actions in the face of any eventuality" (loc. 4672). Moreover, as cognitive scientist Lisa Zunshine argues, stories provide us with knowledge and understanding as well as creating "new forms of meaning for everyday existence" (164). Thus, we as humans tend to make sense of the world and relate to it through stories. Therefore, our relationship with the natural world can be transformed thanks to the stories we create about it. Or, by applying the artistic lens, might we not be able to bring ourselves to seeing what was before unknown to us or concealed from our sight?

4 https://crochetcoralreef.org

5 *The Merriam Webster Dictionary* defines 'Ecology' among other things as "a branch of science concerned with the interrelationship of organisms and their environments" (*Merriam Webster Dictionary*. Accessed 10 July 2020). Its words are borrowed to illustrate the concept behind the expression *imaginative ecologies*.

Several authors have already analysed the power of cultural artefacts, works of art and literature, to produce imaginative ecosystems where the human mind working through its empathic powers achieves a better, more profound understanding of itself in relation with the more-than-human world. William Rueckert distills his vision in his seminal article "Literature and Ecology: An Experiment in Ecocriticism" where he "[applies] ecological concepts to the reading, teaching, and writing about literature" in order to produce what he refers to as "literary ecology" (107). For him poems as well as other artwork are the "equivalent of fossil fuel (stored energy)" (Rueckert 108). Thus, any cultural artefact referred to in this book—a short story, a painting, a sculpture, an installation—can be understood in the same way. In line with Rueckert's tenets, the German ecocritic Hubert Zapf proposes "a theory of imaginative literature based on the paradigm of cultural ecology" (Loc. 129) which is a field of transdisciplinary studies where "ecology and culture, biological life science and the sciences of mind, systems theory and textual theory, natural and cultural evolution" are brought together (Loc 146). Like Rueckert, he is aware of the fact that other art forms besides literature "could equally be included in such a cultural-ecological analysis" (Zapf Loc 235) for all of them share "artistic potency" (Zapf Loc 284). That is, literature and the arts "[are] not only *ergon* but *energia*, a living force field of transformative energies which both subvert and enhance human consciousness and existence in rationalized modern societies" (Zapf Loc 306).

Thus, these imaginative discourses, these landscapes of imagination that writers and artists produce, can help us generate more sustainable forms of co-habitation. Perhaps we can learn from these creative laborers the way to disentangle our potential for fantasizing, for putting our imagination in practice. Not in vain Ursula K. Le Guin turns a passage of her book *Dancing at the Edge of the World* into a sheer defense of the powers of the human imagination since as she argues:

> Only the imagination can get us out of the bind of the eternal present, inventing or hypothesizing or pretending or discovering a way that reason can then follow into the infinity of options, a clue through the labyrinths of choice, a golden string, the story, leading us to the freedom that is properly human, the freedom open to those whose minds can accept unreality. (45)

When this book first began its journey, nobody foresaw a global pandemic that would transform our society and the world as we knew it. Over the past months our entire life has changed shaping a future that seems anything but

bright. The crisis that we are facing is part of a much broader problem, one deeply connected to our dysfunctional relationship with nature. Now, more than ever, imagination is key in envisioning change and rethinking the way we interact with the world around us. Despite the fact that the chapters of this book were all written and reviewed long before the pandemic, many of them address the need for our civilization to change its anthropocentric view, the necessity for a shift of perception and values which requires new narratives to inspire change. In retrospective, they read as a framework that can provide us with new approaches to nurture the web of life and rethink our relations, reconciling nature and culture, science and art and help us envision a holistic view of the world through environmental imagination.

Environmental humanities has a key role in imagining how society will change. As a transdisciplinary approach it constitutes a valuable tool of ecological awareness and ethical transformation. These chapters offer initiatives to both help understand the cultural roots of our environmental crisis and, in fostering the attitudes and skills necessary, help change the perception of humanity and its place on earth, and urge for a biocentric rethinking of human relationships to non-humans and reawaken our senses.

The book has been divided into three major sections, each addressing different aspects of our imaginative process, from different understandings of the context and the need for perceiving the problems, to the academic analysis and interpretation of creative works to the actual creative process of those imaginative discourses. In the process, we have dealt with the different discourses of various disciplines, literary studies, pedagogy, philosophy and the visual arts, yet beyond the different methodologies and perceptions, the objective is the same—how the different "texts" converge into an ecosystem striving for increased awareness and methods of reading affect and inspiring change. The book is daring in its form as it presents an imaginative mix of different academic types of inquiry, an ecology of methods such as interviews, research essays, critical and descriptive and a short story. Such multiplicity of approaches, we believe, is necessary to grasp environmental issues from a humanities-driven perspective.

Thus, the first part, *Humanists in Conversation*, comprises three different articles, which can be read as diverse conversations all of which communicate the need to understand the Anthropocene. They challenge us to rethink our own relationship whilst drawing on the importance of education as a key tool to communicate and understand environmental issues.

Scott Slovic's article "Environmental Humanities and the Public Intellectual" opens this section and places environmental humanities in relation to the importance of teaching. Up until now scholars in environmental humanities

have tended to focus on small problems rather than larger and more disturbing issues. Slovic argues, very convincingly, that a shift in action is necessary and that academics need to take on a more public role in ecological literary criticism and call attention to more pressing issues. Both personal and political actions must be engaged. As Slovic urges, it is time, now more than ever, for an "absolute mobilization of our hearts and minds" and he challenges us to think differently. Drawing on the special Winter 2014 issue of *ISLE: Interdisciplinary Studies in Literature and Environment*, devoted to global warming and climate change, he offers various pedagogical strategies which can be applied to current environmental issues in order to put this into practice in the classroom and engage students (through academic writing and public testimony). As Slovic shows, for environmental humanities to be effective, the practice of environmental humanities scholarship and teaching must be viewed in the context of academic responsibility and accountability.

This is followed by Diana Villanueva-Romero's interview with Christof Mauch, co-director of the Rachel Carson Center for Environment and Society, in Munich. Since its foundation in 2009, the Rachel Carson Center has contributed to the development of environmental humanities and stands as one of the most prestigious institutions in the field. The conversation looks at its history and development to explore how the centre has become a pioneering model. The institution facilitates research in the field of environmental humanities and holds a series of workshops and public conferences as well as hosting a doctoral program "Environment and Society" in collaboration with the LMU Munich. As Mauch explains, key to the ethos behind the centre was the idea of bringing scholars with a common interest in the environment from different disciplines together. Through the conversation Mauch explores the difference between the terms "environmental humanities" and "environmental history" and discusses the future of environmental humanities in Europe as well as the relationship of humanities as a field with natural sciences. Like Slovic, Mauch also advocates for the importance of scholars from environmental humanities to work with natural scientists.

This first section closes with Juan Carlos Galeano's interview "El Buen Vivir is Harmony. A Conversation with Rafael Chanchari Pizuri." Galeano, who is better known for his poetry inspired by Amazonian cosmologies, looks with Rafael Chanchari Pizuri, an Amazonian philosopher and shaman, at the sophisticated narratives of indigenous Peruvian Amazon tribes and their relationship with globalization and climate change. The interview considers current environmental challenges whilst relating them to the complex knowledge systems and narratives that the Amazonians have developed from their ancestors to interpret globalization and climate change. The conversation analyses

the notion of "El Buen Vivir," a concept which englobes the harmony between good living and happiness inviting us to reconsider our environmental crisis from a new perspective whilst looking at human relationships with nature, the river and other ecosystems.

Part two, entitled *Interpreting Eco-visions*, comprises articles which read as imaginative discourses to understand the Anthropocene and offer an academic analysis and interpretation of creative works. The first article "Environmental Imagination and Wonder in Beatrix Potter" by Lorraine Kerslake seeks inspiration in Rachel Carson and Lawrence Buell, drawing on the reader's ability to experience a sense of connection with the environment and looks at the role that children's literature can play in imagining a more sustainable society and the importance of instilling a sense of wonder to the natural world in children. The chapter explains the close and necessary relationship between science and literature in the life and work of Beatrix Potter and how that close tie brings about a more realistic, non-sentimentalized awareness of nature for children. Through Potter's imagination and art, literature and drawings, children are both engaged with but also made aware of the not always peaceful cohabitation between species in the ecosystem.

This is followed by Chris Fremantle and Anne Douglas's article "Foregrounding Ecosystems: Thinking with the Work of Helen Mayer Harrison and Newton Harrison" which draws on *The Serpentine Lattice* (1993) and literary and visual devices such as ethnopoetics, presenting us with an alternative way of understanding the world and our existence, fundamental for the wellbeing of the web of life and ourselves. The chapter highlights the complexity of the Harrisons's artwork, combining visual arts, poetry, economics, ecology and politics and how this artistic imagination can shock audiences into striking realization that in turn can effect change.

Irene Sanz-Alonso's chapter "New Worlds Beyond Reality: Imagined Futures in Laura Gallego's *Las Hijas de Tara*" explores the values of alternative worlds and the societies portrayed in literary genres such as fantasy and science fiction as an alternative example of cohabitation. Sanz focuses on well-known Laura Gallego's novel *Las hijas de Tara* [Tara's Daughters], another work aimed at young adults. The writer uses her imaginative and pedagogical capacity to illustrate the negative consequences of an extreme nature/culture dualism. She creates an alternative futuristic world where nature and technology are at loggerheads with each other: both worlds are in continuous war against each other and the inhabitants of each are completely ignorant of the other. The journey of two girls from opposing worlds leads them to dispel their prejudices, understand and help each other, pointing to a lesson of tolerance and more balanced attitudes.

This is followed by Imelda Martín's chapter, "Simon Ortiz's Narratives and Joy Harjo's Poems: Towards Regenerative Societies and New Worlds" which uses the works of Ortiz and Harjo as windows which open to new possibilities and focus on the recovery of a "storytelling" tradition, representing an escape towards a transition of creating regenerative communities and new worlds. This chapter highlights how the stories and poems by Ortiz and Harjo draw new maps and paths in various directions in order to regenerate a harmonious balance and dialogic interspecies ethics. The tales shift from traditional Native American perspectives to the recreation of more sustainable and respectful attitudes which gather the old together with the new.

The section closes with Barbara Fluxá's piece "When Matter Takes a Position: Post-anthropocentric Landscapes in Contemporary Art," which advocates contemporary art as a transdisciplinary approach and offers a new cultural paradigm as an alternative to our systemic global crisis and the displacement of humanity. Fluxá illustrates how the artistic imagination, coupled with technology and scientific models, creates or recreates geological, natural and technological processes which have or could alter this Earth. She focuses on numerous artists and installations which in different manners recreate geological processes. The recreations clearly affect the viewers who, at times, unwittingly become performers by interacting physically with these installations, and are propelled into an awareness of these processes and their implications. The result goes beyond the simple representation of nature to look at artists in collaboration with those who work in the study of the solid earth and soil sciences to propose post-anthropocentric landscapes.

The last part, *Inspiring Change*, pays special attention to the creative process of imaginative discourses revolving around the idea that cultivating an awareness of the land may help to construct communities that, with time, will interact with their surroundings in a more sustainable way. It opens with artist Carma Casulá's contribution, "Sense of Place as an Enhancer of Empathy and Ecological Consciousness in the Baix Llobregat" whose site-specific work looks at landscape and the emergence of an ecological conscience among the inhabitants of the Baix Llobregat, an ambivalent space where conservation of spaces of significant natural, touristic and agricultural tradition co-exist with environmental degradation derived from intense industrial exploitation. As a photographer, Casulá's project is aimed at making this situation visible by creating a photographic series which she refers to as "forming a Memory Bank of Farmers in Spain." The collection is organized around two goals: first, offering a Physical Map of the area, and second, creating an Affection and a Connectivity Map based on the results of her field work with the local people through which she tried to understand the maze of relations that underlies

their attachment to the place where they have traditionally lived and work. Hence, relationality becomes the organizing trope of a chapter where the author also voices her criticism of contemporary systems of living marked by a "disproportionate disaffection" and impels the reader to "[activate] biocentric attitudes."

This is followed by Carmen Flys and Beatriz Lindo's interview with the earth-based spiritual writer and activist Starhawk, aptly entitled "Building Stories to Change the World." The interview draws on Starhawk's novels and looks at the role of using narratives to envision change and reinvent new worlds through stories. This conversation shares with the previous one an attention to community, although of an experimental kind given the impact of Starhawk's novel *The Fifth Sacred Thing* (1993) where the artist-activist explores new ways of being in the world by describing what it would be like to live in a place ruled by norms inspired by "usefulness, beauty, sustainability, nourishing for the earth (or not damaging) and nourishing for the soul." Starhawk emphasizes the importance cultural and social tools have in addressing pressing issues of environmental importance such as climate change. She defends the power of imagination and ritual to instil change and offers a hopeful perspective on the potentiality of humans to regenerate themselves into better coparticipants of planet Earth.

In line with this message, Elena Sánchez-Vizcaino and Lucía Loren's article "Eco-interactions: Art and Community" offers insight to answering the question of how the arts can contribute to creating a more sustainable society. In doing so, Elena Sánchez-Vizcaino analyses Lucía Loren's work and her experience and interaction with environmental art through local communities. Loren's interventions, which she likes to refer to as "interactions," always invite local people to contribute with their knowledge and sensitivity to the place. Such is the case of *Al hilo del paisaje / Landscape Thread* (2007) done in collaboration with the people of Santa Lucía de Ocón, La Rioja (Spain). This is so because Loren, as Sánchez-Vizcaino explains, conceives her work as the result of a collaboration with the inhabitants of the place where her art will be integrated in its landscape. In her participatory model of art creation, Loren finds a potential to provoke an emotional reaction as well as a consciousness-raising. This gives her projects the potential to "[communicate] what is not visible to reason" and in so doing to serve as an inspiration for the future.

Last, but not least, the book closes with an epilogue in which José Manuel Marrero-Henríquez offers in "Chickens like Celebrities" a short story which takes place during a transatlantic flight when the protagonist, whilst contemplating a lunch menu, suddenly decides to become vegetarian for the well-being of the planet. The short story itself is an act of the author's imagination

but it also deals with the imagination of the protagonist and how this inspires a personal decision to change. Marrero-Henríquez's short story meaningfully embodies the role that imagination can play in producing new responses to daily activities, such as eating meat, which may represent a more thoughtful appraisal of the role to play by humans in the world.

In the fields of literature and the arts, the importance of imagination to engage the reader and viewer and contribute towards change is more pertinent now than ever. Changing our view of humans' place in the world could actually save our planet. Imagination is perhaps the most important tool we have to do so. Not only can it engage us, but it can also make us aware of the impact of our actions and thus help to change our attitudes. The following chapters, from a variety of fields inherent to environmental humanities, therefore share an inherent conviction that imagination and the humanities can play a significant role in heightening environmental awareness and inspiring changing attitudes to promote transformation. As editors we hope these creative discourses may provide readers with ideas to inspire resilience towards the global environmental crisis that we are now fully immersed in. It is never too late to commit oneself to rethinking our relationship with nature and aspire to the type of harmony one of the contributors to this book, Rafael Chanchari Pizuri, describes from the last remnants of the Amazonia. Perhaps one day, in the not-too-distant future, the notion of "el buen vivir" will become a reality. Until that day comes, we will have to make do with finding hope and seeking ways to imagine change such as those suggested in this book.

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PART 1

Humanists in Conversation

PART 2

Interpreting Eco-visions

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CHAPTER 8

When Matter Takes a Position

Post-anthropocentric Landscapes in Contemporary Art

Bárbara Fluxá Álvarez-Miranda

Abstract

In response to the systemic global crisis a new cultural paradigm is taking place as an imaginative alternative the hegemonic modern narrative, displacing humanity from its persistent anthropocentrism, under which the instrumentalization of the world and its materials has been justified exclusively in materialist terms. This network of thought advocates for a new subjectivity fueled by the hybridization between nature, techno-science and culture, where contemporary art acts as a source of critical knowledge to establish a transdisciplinary approach towards the understanding of this paradigmatic setting. Many artists like Olafur Eliasson, Ursula Biemann or Regina de Miguel for example, in collaboration with specialists in climatology, hydrology, oceanography, and especially those who work in the study of the solid Earth—geology, geography, soil sciences or geodesy—go beyond the simple representation of nature to propose multidisciplinary complex landscapes grounded in post-anthropocentric affect and emotion.

Keywords

Matter, post-anthropocentric, contemporary art, landscapes.

1 Contemporary Paradoxes

Humanity is experiencing a paradoxical historic moment in which it is difficult for us to accept a positive view of ourselves as a species because while planet Earth is suffering the greatest systemic environmental crisis in our history (IPCC),[1] we continue to make enormous progress in the fields of science,

1 Climate change has been ratified by the IPCC. The Intergovernmental Panel on Climate Change (IPCC) was created in 1988 to provide comprehensive assessments on the state of

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medicine, and technological innovation (Harari 31).[2] On the one hand, we develop incredible technical and scientific means that are capable of resolving a large part of the planet's ecological problems and social imbalances, and yet, on the other, we are not capable as a subjective and affective social force to put them into practice (Guattari 42). This *modus operandi* occurs because the Western tradition has been based on mistaken ethnocentric beliefs about the superiority of human beings over other beings, the universe, and its matter. Paradoxically, although the nature/culture dualism lacks an ontological basis, it has developed over the history of humanity until becoming reality, with the ironic result of it finally dissolving as a result of today's complete dominance of nature by man.

From an ecosystemic point of view, Earth science specialists tell us that over 90% of plant growth currently takes place in agrotechnology systems run by humans; 90% of all biomass – of all living things – is originated by man or domestic animals; and over three quarters of the Earth's surface (free from ice) is no longer in its "original" state, but rather in cultural landscapes created directly or indirectly by man (McNeill 260). Based on an infinite number of intergovernmental studies and reports, today it can be objectively asserted that human activity with its social and economic processes has become a significant factor for change and transformation in how the Earth functions, on a global, systemic scale, on par with a geological or climatological agent. Furthermore, the existence of a new atmospheric layer on our planet called the "technosphere"[3] can be confirmed: a new anthropogenic planetary sphere which refers to the technological-functional palimpsest complex into which we have converted our habitat's ecosystem. This is the premise of the scientific theory of the Anthropocene,[4] which affirms that the Holocene, which until now had been our geological era, has ended. However, rather than enter into

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scientific, technical, and socio-economic knowledge on climate change, its causes, possible repercussions, and response strategies. See: www.ipcc.ch/home_languages_main_spanish.shtml (accessed June 2018).

2 To mention just some achievements: in medicine, for example, of note are the increase in life expectancy and control over disease (except cancer and HIV); in astronomy, greater knowledge of the universe thanks to the launch of satellites and rockets to outer space; or in technological innovation, the creation of electronic devices that have brought our lives into an intangible world that is hyper-connected thanks to information systems and the digital communication of a networked society (Harari).

3 The neologism "technosphere" (now used fairly frequently) was proposed in a somewhat premonitory fashion, if I may say, by the geochemist Vladimir Vernadsky (1863–1945) in his famous book *The Biosphere* (1926).

4 Term coined by Paul J. Crutzen, Nobel Prize in Chemistry in 1995 for his studies on the hole in the ozone layer.

scientific debate, what I would like to remark here regarding this incredible theory is that its mere existence – as a multi-disciplinary world view of the human race as preying on its own habitat, until fully destroying it – is resulting in society's profound awareness and an ethical revision of the Western way of inhabiting the world, especially because the driver of Anthropocentrism and instrumental modern scientific thought is based solely on the myth of progress. The good news is that, precisely thanks to this unpleasant awakening, we are finally beginning to realize to what extent we are inseparable from the system and how our dominating action is affecting its destabilization.

That promising economic, scientific-technical, and political undertaking of Modernity – universalist, ethnocentric, imperialist, and colonialist – has failed; as has the anthropocentric thought that gave free reign to planetary domination based on a relationship with natural "capital" exclusively in terms of economic exploitation (Mignolo 48). For too long, we have managed our world through the needs and urgencies of the capitalist market, which have materialized in the modern world as a consumerist delirium of production and destruction of space and nature. The management of what today is referred to as "second nature" (Morton 82) drifts between conflicts of outrageous (unplanned) interests, at the whim of political power.

2 A Transdisciplinary Network of Post-Anthropocentric Sensitivities

Given this context, the new humanities, bridging the traditional gap between science and the arts, defend the disappearance of the historic longing of the modern subject, who, located at the center of the universe, dreamed of a world stripped of surprise, which would become a mere technical automatism. The new human and social sciences are shifting away from the "man" of Modernity and, before that, of Christianity and the Renaissance. It seems that in our time, "it is not becoming the planet's stewards that Earth-lovers dream, but of a time when humans ceased to matter" (Gray 17). Contemporary philosophy speaks of a man who is born with scarcity and indeterminacy (Castoriadis 193), which forces him to culturally channel the empirical and sensory experience, to regulate it through knowledge, intuition, and his senses, producing the world. This individual man must re-balance relationships with his own subjectivity (mental ecology), with society itself (social ecology), and with nature (environmental ecology) to establish a new way of producing the world (Guattari 56).

Today, a new cultural paradigm is being forged as an alternative to the modern hegemonic model, which aims to shift humanity away from its anthropocentrism, and advocates for a new subjectivity full of hybridization

and interferences between nature and culture (Latour, *Nunca* 55). Its challenge now is to find a new formula outside of the historical hegemony of humanism, in order to offer different paths and hypotheses to put into practice a new human behavior that is interconnected with the planet (Braidotti 39). It seems reasonable to think that this will require of us, at first, an enormous effort to reconnect with what is most essential, our habitat, in an attempt to "reset" (GLOBALE)[5] our relationship with nature. To do so, we must define new concepts that signify us in all of our complex reality, through a process of understanding that overcomes the culture-nature dualism and which, in turn, will allow us to reformulate solutions to our current problems. We must overcome the separation between the boisterous subject of law–represented by politicians in parliament–(Serres 143) and the silent object of science–represented by scientists in the lab–in order to produce a new space where new mutual understandings can be established between the power of social force and the mechanisms of natural force, as Bruno Latour argues:

> If [on the contrary] our Constitution authorizes anything, it is surely the accelerated socialization of nonhumans, because it never allows them to appear as elements of "real society." By rendering mixtures unthinkable, by emptying, sweeping, cleaning and purifying the arena that is opened in the central space defined by their three sources of power [nature, society, absence of divinity],[6] the moderns allowed the practice of mediation to combine all possible monsters without letting them have any effect on the social fabric, or even any contact with it. (Latour *We Have Never* 42)

It is precisely this lack of contact to which Latour refers that the multiple initiatives of critical thought and reflection aim to correct. Hundreds of independent individuals and intergovernmental community organizations of all types have added their studies to scientific contributions in order to join forces and generate a space for interrelations given the urgency of the situation. This reintegrating paradigm shift is being undertaken in collaboration with the humanities,

5 All of these issues are being tackled by several contemporary artists and curators in their projects. Suffice it for now to mention the exposition entitled *GLOBALE: Reset Modernity* curated by Bruno Latour in ZKM | Center for Art and Media Karlsruhe in 2016, from where I extract the idea of using the word "reset" to allude to the fact that nature needs to be restarted as if it were a computer system in order to return to its starting point. See: www.zkm.de/en/event/2016/04/globale-reset-modernity (accessed June 2018).

6 Clarification from the author to specify, in the context of the quote, what three sources of power Bruno Latour is referring to: transcendent nature, a free society, and the absence of divinity established by Modernity thanks to the Constitution.

aesthetics and the arts, the sciences, and economics so that our relationship with nature may be established not on antagonistic terms, but rather complementary terms (Prigogine and Stengers 293). This is the case, among other reasons, because these initiatives hold the fierce conviction that a new system of ethical values must be proposed in order to definitively eradicate the old humanist ideas that have led us to the Anthropocene and, at the same time, the economic and political strategies of the Plantationocene and Capitalocene:[7] colonialism, imperialism, technocracy, globalization, and Eurocentrism (Haraway 16), which allow the world to be conceived in exclusively materialistic terms and based on the center-periphery dualism. Only through this ethical change in society's conscience in the face of global crisis, they say, can we rebuild our behavior towards our habitat and thereby improve the quality of life of our own species. And by improving the lives of human beings, we will improve the lives of the living beings, artifacts, and matter that surround us, the *nonhumans* (Latour, *Políticas* 332) guaranteeing a balanced future for the development of planet Earth and the laws and energies that govern it. So then, although somewhat late, after several decades of activism, it seems that this new ethical dimension of respect for the environment is here to stay, as are the principle of responsibility towards future generations, concern about preserving the planet, and international and intergovernmental consensus with regard to the need to take urgent action in the face of the new reality of climate change and the impact of our social-economic model on the planet.

Now then, how to achieve this balance? From what conception of the world should we approach our existence? How can we confront the conflict between the finiteness of natural resources and our contradictory technical system based on unceasing, irresponsible consumption? It seems that there is a certain consensus within these new currents of thought, in which the lines of action and governance for society, looking towards the future, should aim not to preserve or recover a given form of nature–which no longer exists as such–but rather to achieve a new planetary balance among all the spheres that

7 The terms Plantationocene and Capitalocene were popularized as part of the new cultural studies by Donna Haraway in her celebrated text *Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin* (Haraway, 2016); however, they had been suggested earlier by the anthropologist Malm Moore. In any event, the two terms are used to underline the fact that the (ethical and political) responsibility for the ecological and climate crisis of the Anthropocene is not shared by all human beings equally. Not all humans have had the same social and political power to influence the capitalist economic system that underlies said crisis: not the slaves of the development of European capitalism in Southern America, nor the nearly-exterminated and marginalized indigenous communities, nor the people who suffer the misery and labor exploitation of the neoliberal system (Moore, 2016).

comprise the world today: the atmosphere, geosphere, hydrosphere, biosphere, as well as the recently denominated noosphere and technosphere. To do so, a transdisciplinary global culture–that has been ethically agreed to (Guattari 35)–must be developed where the focus is on an urgent reconnection with this new natural-artificial system in order to provide coordinated global solutions that are the result of an understanding of the system in all of its complexity.

Thus, a new transdisciplinary culture is on the horizon, one that is committed to the survival of the second nature and man (Morton 49), and which prioritizes its ethical, social, and political principles above economic and materialistic values. This new cultural paradigm has space for a new transdisciplinary science that experiments and develops in the direction of technological innovation, but towards the promotion of a new model of knowledge based on the search for social and ethical values (Echeverría 160), because science without a social conscience or environmental ethics–solely at the service of the market economy and geopolitics–is a far cry from the discipline that the planet needs today.

The new cultural ethics that this collective social conscience should promote must be far from the notion of the instrumentalized nature of mechanical science and the capitalist economy. We need a new culture that finally accepts that human beings are interdependent on other living things, inert matter, and natural ecosystems and that, while cultural by nature, they are in no way all-powerful. Instead, humans must know how to negotiate with a space that, as contemporary science tells us, is indeterminate, perilous, in chaos, and based on the principle of uncertainty. Humanity must shift from its sole aspiration being to acquire "knowledge" of the world as a means of manipulating it through science to "understanding" the world through man's interaction, not as a dominating force, but rather as a component. The new science tells us that the universalist dreams of modern science have been toppled by phenomena such as magnetism and thermodynamics. As a result, we can no longer be absolutely sure of our knowledge, we cannot project ourselves into the future (except in a probabilistic manner), because reality can no longer be understood independently of time. Time in contemporaneity, understood as an essential factor in the dynamism of what is real, chaos, action, and chance, results in a renewal of the conception of the mechanist world, as the system is now seen through the lens of the unstable and dynamic. And, as difficult as it may be for us to accept it, this all implies a view of nature as unavailable and, in large part, untamable by man (Kaku 335). The humanistic belief that humanity is capable of controlling its destiny is increasingly far-fetched.

3 The Participation of Artistic Practices

The complex new spatial-temporal realities described above are also reflected in the narratives of contemporary artistic practices. Artists from around the world, immersed in these new transdisciplinary currents of thought, and drawing from their artistic imagination, are proposing a decentralization of our outlook on nature through new "post-anthropocentric" landscapes as an alternative to the performance of the traditional landscapes that were characteristic of humanism. They understand that there must be a new interrelation of coexistence with nature which destroys the classic subject/object dualism, which granted a central, advantageous position to human beings, compared to a fixed, passive nature at the disposition of our perpetual domination. They are putting into practice strategies of critical, ethical, and political art that are committed to modern society. They are revising the function of art and artists, encouraging a profound reflection on art's capacity to generate knowledge. They are making cultural mediation possible in society because they want to participate as active agents in the reconstruction of our world. They are inserting themselves into society to activate it, proposing their work as a short-circuit or wake-up call that will generate awareness, in most cases in the format of a multidisciplinary artistic project that goes beyond the work of art as an object exclusively destined for the art market.

Today's artistic practices interested in the issues of contemporary culture and nature establish transdisciplinary relationships with the new humanities, social sciences, anthropology, psychology, and phenomenology; but also, with the hard sciences related to this new world view instigated by both climate change and the Anthropocene: physics, chemistry, life sciences, and, especially, Earth sciences. The artists acquire and put into practice methodologies typical of these disciplines that are in line with their way of understanding the world as a strategy for artistic production. In this conceptual role swapping, in which the artist carries out a kind of division or shift towards the place of the "other"–that of the amateur as anthropologist or geologist, for example– the acquisition of methodologies characteristic of the scientific disciplines as a means of creation enters into play. Through scientific and technological means, they create visually and intellectually hybrid works of art that explore the material and cultural nature of our world, at the same time questioning how these devices mediate our experiences. Field work, producing taxonomies, compiling files, displaying experimentation devices, teamwork and collaboration, and the use of technical innovation and new technologies are the new strategies for creating their works. Through their work, they do not

"depict" an image of a landscape, but rather they "present" material and immaterial elements–not necessarily of an aesthetic nature–from the world that surrounds us as an artistic mechanism. Objects, tools, artifacts, matter, documents, phenomena, sensations, ideas, and experiences are now the materials of the new "post-anthropocentric landscapes."

4 When Matter Takes a Position[8]

> One's mind and the earth are in a constant state of erosion, mental rivers wear away abstract banks, brain waves undermine cliffs of thought, ideas decompose into stones of unknowing, and conceptual crystallizations break apart into deposits of gritty reason. Vast moving faculties occur in this geological miasma, and they move in the most physical way. This movement seems motionless, yet it crushes the landscape of logic under glacial reveries.
>
> (SMITHSON 45)

Of all the transdisciplinary strategies of contemporary art proposed above, I will focus on collaborations between contemporary art and Earth sciences. Hydrology, oceanography and the disciplines involving the study of solid Earth (geology, geography, soil science, and geodesy) become potential tools for relativizing the insignificant place occupied by humanity, not only in the history of the geological time of planet Earth, but also in that of the entire universe. By interrelating with these sciences, and the presence of their matter, the artists propose a new system of ethical values with regard to nature that makes plain that not only are the old anthropocentric ideas that justified the exploitation and instrumentalization of the world and its matter exclusively in materialistic terms out of date; but they are also not valid because they spatially and temporally situated human beings in a place–at the center of the universe–that today we certainly know does not correspond to them. In response, now inert matter occupies an ironic central role in the representation of nature and the universe, thanks to a voluntary cosmic decentralization of the contemporary *anthropos*.

8 A play on words based on the essay by philosopher Georges Didi-Huberman *When Images Take a Position* on the poetic work of the playwright Bertolt Brecht. I have replaced "images" with "matter" because I find similarities between the poet's creative method and certain contemporary artists, in terms of the strategic use of dialectic montage as a language for representing the world: decentralization of the spectator, superposition of images/matter, complex transdisciplinary mediation, and multiplication of spatial-temporal perspectives.

I will now examine just a few examples of the multiple contemporary artists who are following these strategies for presenting the real and the natural. I will address some relevant works that are based on the appropriation of matter as the main focus of the contemporary landscape narrative. I will interpret this strategy as a committed, conscious proposal to displace the creator subject from the act of artistic performance so as to give way to the object–already provided by nature–as an eco-historic witness of the spatial-temporal reality of our world and, consequently, of the universe. As if by presenting the object/matter that makes up the real world as a non-anthropocentric, natural, ready-made element, it could represent itself without the need for mediation by the colonizer, dominant human being. Although this strategy's objective of displacing the inevitably subjective action of the creator subject may seem utopian, it seems to be legitimate and promising because of the goal it pursues. Utopian stories are still possible, just as "ideas decompose into stones of unknowing" (Smithson 124). Let us examine some of them, then.

5 *Arctic Sea Ice in* Ice Watch *by Olafur Eliasson, 2014–16.*[9]

This work, created by artist Olafur Eliasson (Copenhagen, 1967) in collaboration with the geologist Minik Rosing, directly addresses the issues of atmosphere and air quality as an ethical-political, as well as artistic concern. To carry out this project, Eliasson collects 12 large 100-ton blocks of ice that have broken off from the Greenland ice sheet from a fjord outside Nuuk and presents them in a clock formation in a public place open to citizens, while they creak in their melting process. The installation aims to raise awareness of climate change by providing a direct and tangible experience of melting arctic ice. It reminds us that not too long ago, perhaps a bit over a century, the prediction of time was directly related to the survival of the species, to physical wellbeing; and that, due to the technological inventions of the modern era, our relationship with the climate had become secondary, until the realization of climate change made us aware of this modern illusion. The unpredictability of time is a phenomenon that refuses to be fully colonized, and even more so now that global warming bears witness to this fact.

9 *Ice Watch* has been installed in two places as of now. The first installation was in Copenhagen, in City Hall Square, from October 26–29, 2014, on the occasion of the publication of the UN's IPCC Fifth Assessment Report on Climate Change. The second installation took place in Paris, in the Place du Panthéon, from December 3–13, 2015, for the United Nations Climate Change Conference, COP21. See: *www.icewatchparis.com*/ (accessed June 2018).

6 *Glacial Ice in* Subatlantic *by Úrsula Biemann, 2015*

In this science fiction video essay entitled *Subatlantic* (web), the film artist Ursula Biemann (Switzerland, 1955) juxtaposes science, geology, and climatology with the history of humanity. The film's story takes place during the Subatlantic period, the last climatic phase of the Holocene which began about 2,500 years ago, and which has witnessed the majority of humanity's historical events, such as the Roman Empire, the discovery of America, and both world wars, in addition to many extinctions of all kinds of species. The voice over that is heard throughout the film is allegedly a female scientist who is making instrumental observations about the changing spatial-temporal landscape surrounding the last glacier thaw. As the video advances, the images situate us in an increasingly submerged place of oceanic observation, where the viewer examines both the objects of the physical world–the atmosphere that is enveloping her–as well as the thoughts of humanity itself, which are reconfigured or modified under the changing conditions of the new climatic scenario. *Subatlantic* also alludes to the submerged space of the Atlantic Ocean, from Disco Bay in Greenland to a small Caribbean island, showing locations that are very far apart but that, in turn, are connected by ocean currents. Biemann addresses a subaquatic landscape with dynamics of connection that are invisible to the human eye, a hidden, uncolonized place.

7 *Copper in* Copper Country (*Bingham Canyon, Chuquicamata, El Morro*) *by Maarten Vanden Eynde, 2016*

The artist Maarten Vanden Eynde (Belgium, 1977) is currently investigating the influence of the transatlantic trade of materials that are historically and culturally essential to Western civilization (rubber, oil, ivory, copper, cotton, and uranium), but also the trade of human beings. He is interested in how this trade has affected the evolution of contemporary society, the creation of nation-states and power structures on an international level, and, lastly, our own planet on a global level. The project *Triangular Trade* (web) traces the origin of different materials and follows their evolutionary path as they are processed and transformed into commercial "treasures." The artist is interested in highlighting the little-known and often overlooked global historical influence of the Western world's trading practices in the Congo through the exploitation of its natural resources, especially cotton, copper, and uranium, which played an important role in the "triangular trade" between Africa, the southern United States, and central Europe. In his installations, through a decolonial strategy,

he merges the recovery of the historical and political memory of matter, the contemporary drifts of globalized trade and its colonization with the material remains of technological evolution.

8 *Calcium Carbonate in* The Mineral Body *by Ilana Halperin, 2013*

This series of sculptures was created by Ilana Halperin (New York, 1973) in a small thermal city in the mountains of Auvergne, France. There, several generations ago, a family founded the *Fontaines Pétrifiantes* to create limestone sculptures made through the same natural process by which the carbonated water of volcanic caves forms spectacular stalactites. Inside these limestone caves, there are carbonate-rich waterfalls that the artisans use to produce all kinds of petrified objects. Normally, in a limestone cave it takes stalactites one hundred years to grow one centimeter. In the *Fontaines Pétrifiantes*, thanks to a system of steps and casting ladders in heights, one centimeter grows in one year. The pieces in *The Mineral Body* (web) installation took four months to form. The petrification of this series of organic-looking wooden shapes astonishes the spectator, who is faced with calcareous objects/subjects of a strange hybrid nature. Halperin approaches stone not as dead matter, but rather as a living geological process. The mineral is presented to us as a fluid, living substance full of autonomous creative capacity, where human intervention is not required.

9 *Limestone in* El capítulo de los áridos ($CaCO^3$) *by Bárbara Fluxá, 2018*

This audiovisual installation by the author, Bárbara Fluxá (Madrid, 1974), was created in the environment of an open-pit limestone quarry, in a small rural town in the valleys of Asturias, northern Spain, where the artist has family ties. The work (web) reconstructs–through videos, virtual 3D models, drawings, and photographs–a mountain that disappeared as the result of mining operations after over 40 years of activity. This time period coincided with the life of the artist, who watched the mountain disappear gradually throughout her life, explosion after explosion. In collaboration with an archaeologist specializing in virtual reconstruction of land and by recording the mountain being blown up in the course of ongoing industrial activity with several cameras, the artist poetically reverts—in the context of art—the emptying and breaking perpetrated on this familiar landscape. New technologies allow us to reverse human action in a dramatic gesture of utopian recovery. This work is part of a broader

FIGURE 8.1 Still from the installation *El capítulo de los áridos* by Bárbara Fluxá, 2018.

project entitled *Capital Natural*, which reflects upon one of the great debates in modern society: the insatiable material exploitation of the land by the neo-capitalist economic system, whose only way of relating to the world is exploiting and dominating it. The work appeals to the debate regarding the necessary deceleration of hyper-consumerism and the unsustainable use of limited natural resources. It aims to point out the technological arrogance of contemporary human beings that enables them to make land that is millions of years old disappear from the geological map in a matter of seconds. The negative morphology of the contemporary Asturian landscape – from the bird's-eye-view of Google Earth – with hundreds of mountains that have been blown up is a good example of this problematic human domination.

10 *Granite in* Earthworks *by Semiconductor, 2016*

The video installation *Earthworks* (web), conceived by the duo Semiconductor (Ruth Jarman & Joe Gerhardt, England, 1972), at the La Planta quarry in northern Spain was created in collaboration with Spanish scientists. The work displays data on the glacial, seismic, volcanic, and artificial activity at that quarry, projected as a digital animation with sound on five screens. The translation of these data to sound and digital images represents, in some way, the activity of the Anthropocene, our new anthropogenic geological era. The images resulting from the seismic data are fluctuating, spectacular marbled waves full of color, layers that are animated with the sounds of earthquakes and volcanic, glacial, and human activity, registered as seismic

waves. *Earthworks* offers an immersive experience to the spectator, who now sees–from inside the geological phenomena themselves, materialized in virtual models–the formation of the landscape through the same scientific and technological devices that are used to study it. Semiconductor is attempting to make visible both nature's hidden geological forces and human beings' tools and technologies for scientific measurement. These two forces possess two diachronic temporalities, the impossible-to-conceive geological temporalities which occur beyond the chronological time of human beings, and anthropogenic temporalities, which, in recent decades, have become visible and quantifiable with multiple scientific indicators. The artists defend the idea that the formation of the landscape can only be experienced through the technological mediation of nature. *Earthworks* draws attention to information about time, space, and the geological phenomena that transform the Earth, which allows us, for the first time, to be witnesses to the overlap of geological time with human time.

11 *Volcanic Rock in* Quatemary *by Tacita Dean, 2014*

Film-maker Tacita Dean, in her photographic polyptych *Quatemary* (web), shows us a post-apocalyptic geological landscape created using a blend of modern images captured by the artist and historical photographs from the 19th century of the emblematic Yellowstone National Park in the U.S. The work is a dystopian landscape fiction based on the hypothetical possibility of a volcano erupting and splitting the American continent in two, creating a dust cloud that would block out the sun and lead to the extinction of all living beings that inhabit the Earth. The resulting dystopian images produced using a strange aesthetic somewhere between the fantastic and the documentary depict a barren landscape as an enigmatic post-nuclear wasteland. This landscape attempts to show us everything that science believes was on our planet before the human race appeared, and what will most likely remain once we are gone. *Quatemary* is related to Dean's artistic concern with capturing memory, the spatial-temporal future, and coincidences and chance in the historical events that take place in human beings' lives.

12 *Seismic Quartz in* Medium Earth *by The Otolith Group, 2013*

In this film essay (web), the duo The Otolith Group (Kodwo Eshun, London, 1967 and Anjalika Sagar, London, 1968) explores the seismic activity of the

geological landscape of California, U.S., as well as the psychic-sensory activity of certain "mediums" who say they can detect earthquake activity before it occurs. The main protagonist of the film is one of these "mediums" who is capable of predicting the electromagnetic field activity generated by tectonic plates during earthquakes through complex psycho-physical sensations. Through scientific and documentary images of the tectonic morphology of California, the artists explore the confrontation between the mythical cultures of geo-poetic prophecy and prediction that mediate the psychic and sensory experience of humans and the Earth and the hard rationalist sciences that limit themselves to viewing the physical-seismic shaking of quartz substrates translated in the data from their magnetometers. However, while the geological sciences do not accept these sensory capabilities in humans because they assert that our cerebral cortex has lost the ability to perceive and translate these signals, they do recognize that the limbic brain of animals can do so. Science knowns that earthquakes locally disturb the planet Earth's natural electromagnetic field, and that this micro "piezoelectric" disturbance of the quartz is detected and translated by the "natural magnetometer" of many animals' brains. Although it does not allow humanity to possess this sensory ability, it does endeavor to research technological systems that can predict these events for us.

13 *Dark Matter in* El conocimiento nunca viene solo *by Regina de Miguel, 2013*

The work *El conocimiento nunca viene solo* (web) by Regina de Miguel (Málaga, 1977) is related to this revision of the effects of the modern project on our contemporary society, as it offers an analysis of the different types of knowledge produced by science. Using a very special area of the Chilean geography, the Atacama Desert, as the subject, this visual essay constructs a narrative in which different types of knowledge intersect in one of the most extraordinary landscapes in the world. The extreme climatic conditions of this remote desert region make it almost impossible for life forms to live and proliferate there; but at the same time it is an ideal region for astronomical observation of the cosmos thanks to the limited light pollution and its geographic location on the planet. The central theme of this work is an examination of how scientific knowledge is attained in the West, as knowledge is a very powerful tool subject to specific geopolitical and socioeconomic agents. Compared to other areas of knowledge that involve implicit processes of self-criticism and which are aware of their political dimension in society, scientific disciplines have built their narratives with an independence which, in addition to safeguarding an

illusion of autonomy with regard to the reality that supports and drives them, has allowed them to exclude from their field of critical reception all those who are not professional scientists, our amateur artists.

14 *Coal in* Menhir. Instalación 0 *by Menhir, 2015*

The artistic duo Menhir (Coco Moya, Asturias, 1981 & Iván Cebrián, Cuenca, 1980) proposes direct interaction between the spectator and coal from Asturian mountains, in the north of Spain, through digital sound and audiovisual technologies as a way of reconnecting with nature. The spectator–now the performers of the piece–uses their hands to activate the internal sound landscape of the coal rocks through an Arduino[10] system that emits sounds. The work is set up as a material-sound and audiovisual space–or score–that transports whoever performs it to the hidden landscape of carboniferous Asturias through a mental and tactile, in some ways hallucinatory experience, in the words of the artists. Coal acts as a ready-made conductor between the hidden geological strata of mining territory and the social, economic, and environmental experiences of this complex cultural landscape, today extinct. The artists base this work on geomancy, according to which the planet is surrounded by Hartmann lines of energetic force, creating a terrestrial magnetic field. Under the theory of geo-acupuncture, man is called on to intervene with large stones or menhirs in the points where said energetic lines join so as to balance energy. The artists, inspired by these theories, implement a site-specific, non-colonizing, ephemeral audio intervention, which, after disappearing into the landscape, resurfaces and materializes in the exhibition hall through this installation-score.

15 *Minerals in* La Mesure Minérale *by Fabien Giraud & Raphaël Siboni, 2012*

In the film *La Mesure Minérale* (web), shot in a natural history museum, Giraud (France, 1980) and Siboni (France, 1981), Giraud and Siboni investigate the artistic possibilities of technological advances in the language of film

10 Arduino is an open-source hardware platform, based on a board with a microcontroller and a development environment (open-source software), and designed to facilitate the use of electronics in multidisciplinary projects that aim to build digital devices that interact with real-world objects.

FIGURE 8.2 Image from the installation *Menhir. Instalación 0* by Menhir, 2015.

and photography in the representation of time (human and geological) and its relations of scale beyond humans' capacities for measurement. The work was filmed with an ultra-high-speed camera in an empty mineralogy department closed to the public during its restoration. The museum is presented to us as a mysterious, somewhat sinister setting, immersed in a sound track full of magnetism and tension. Giraud and Siboni present the museum institution as a cultural space of history and memory at a standstill, slowing down the time of its geological materials, a place apart from time as experienced by human beings. The museum is a sort of stratified mineral object that is indifferent to our presence, thus emphasizing the insignificant historical presence of human beings on Earth within the immense scale of geological time. *La Mesure Minérale* presents, in a disruptive fashion, the temporal progression of human beings compared to the frozen materialized time of the minerals, presented as musealized artifacts. It is a spatial-temporal view of the world based on our own inability for measurement.

16 *Halite in* Zechstein Sea *by Carlos Irijalba, 2014–17*

Over several years, the artist Carlos Irijalba (Pamplona, 1979) developed this project on the peculiarities of the Netherlands in terms of the country's proportion of water to land. *Zeichstein Sea* (web) is the result of the artist's

collaboration with the company Akzo Nobel, which specializes in mining halite in Hengelo, in which they drilled the strata to remove several 30-meter-long geological remains from a 300-million-year-old dry sea located beneath the Netherlands, Germany, and parts of Denmark and England. That sea is now a solid block of salt buried 400 meters below the surface. Along with these remains of ancestral halite, the installation includes spontaneous maps that are created by spilling seawater directly onto the gallery floor. The work references the materialization of geological time in relation to chronological time on a human scale. Through these geology methodologies, the artist represents the interstices of the Dutch landscape as a hybrid space that is neither solid nor liquid. The channels, ports, locks–all of these aquatic spaces that are somewhere between natural and artificial–represent the Netherlands in all of its hybridity and complexity: Between skepticism with regard to the anthropogenic technical world, but open to admitting humanity's technology as something intrinsic to itself.

17 The Artist as Amateur

As a final analysis of the works presented here, it could be said that contemporary artists interested in the natural space have been driven to work, on the one hand, with a new world view that arose as a result of the new techno-scientific knowledge generated worldwide by the latest research into climate change, the "technosphere" or the Anthropocene (maritime genetics, the economy of coal, atmospheric chemistry, etc.); and, on the other, with disciplines that are closer to the arts, like the humanities or social sciences, but in their updated version–the new environmental humanities, the new cultural and social studies. By putting this fusion into practice, the artists aim to establish cultural and scientific knowledge based on a post-humanist paradigm, which distances itself from the hegemony of human beings and, as a result, considers other non-humans (Latour, *Políticas pagina*) and the displacement of the modern subject. These efforts aim to break with the historic duality between science and culture, returning to and reevaluating a time when human beings and the surrounding space were one and the same. Classical philosophy's divide between subject and object must be revised so that the production of the world and knowledge will be different, to seek another model for relations between human beings and the planet.

I applaud the existence of these post-anthropocentric artistic proposals as models of thought that are alternatives to the until-now hegemonic humanism, even if they are utopian or naive in achieving their aims. By presenting

and questioning new paradigms based on primitive matter, these artists inspire in the conscience of contemporary society motivations, empathies, and methodologies to generate human beings that are more critical towards our own nature and towards the place that we inhabit along with other living things and inert matter. Twenty-first century art as an amateur, yet imaginative, proposal is not intimidated by the powerful scientific and technological means and innovations that affirm that they are the only ones capable of resolving this systemic crisis because it knows that not only is a radical change required in the construction of materialities, but also that a change in the subjectivity of mentalities is absolutely necessary, and in that respect art still has a lot more work to do.

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PART 3

Inspiring Change

Names and Subjects Index