

Systemic Creativity in Environmental and Ecological Art

Raquel de Oliveira Cardoso

Master's Thesis in Human Ecology and Contemporary Social Issues

July, 2022

Systemic Creativity in Environmental and Ecological Art

Raquel de Oliveira Cardoso

Master's Thesis in Human Ecology and Contemporary Social Issues

July, 2022

ABSTRACT

In a moment when climate change, species depletion, generalized pollution, and other environmental problems are as critical as they are today, it is imperative to put our attention on creative perspectives around these issues. Creativity is the keyword of the present research, and it is seen here as a source and consequence of a society that is interested in positive change. Environmental and ecological artists are only one small part of the great community of people who are trying to overcome environmental issues, but they form an ideal group of people to be analyzed in relation to creativity. Using Mihaly Csikszentmihalyi's systemic perspective on creativity, this research has used the information provided by 6 in-depth interviews with environmental and ecological artists to understand what are the forces influencing their creative potential. Among the results, it is clear that the field and its market perspective on the arts is one of the main causes of creativity limitation. Such results are relevant because they provide a very first step in the direction of mitigating such problems, while also generating a deeper understanding of how systemic creativity works.

TABLE OF CONTENT

ABSTRACT	3
LIST OF FIGURES	5
LIST OF TABLES	6
ACKNOWLEDGEMENTS	7
INTRODUCTION	8
HOW CREATIVITY WORKS	10
What Is Creativity	10
Systems Model Of Creativity	12
A Dynamic Model Of The Creative Process	15
Implications Of The Model	20
The Roles Of Creativity In Society	22
ENVIRONMENTAL AND ECOLOGICAL ART	26
Introduction	26
Environmental And Ecological Art	30
How Art Plays A Role In Environmental Consciousness	36
Art And Creativity	41
METHODOLOGY	44
Objectives	44
Methodological Option	44
ANALYSIS OF THE INTERVIEWS	46
First classification: Domain	46
Second classification: Person	51
Third classification: Field	64
RESULTS AND DISCUSSION	74
APPENDIX	76
Questionnaire	76
Interviewee Information	77
REFERENCES	78

LIST OF FIGURES

Fig. 1 The systems view of creativity

16

LIST OF TABLES

Table 1. Broadly accessible domains	46
Table 2. Specific knowledges	47
Table 3. How do you think your work generates changes on how we think, feel, and act?	48
Table 4. Origins of the interest in environmental issues	50
Table 5. Creative process	53
Table 6. Social interactions in the creative process	56
Table 7. Selection of insights to pursue	57
Table 8. Obstacles and advantages related to the field	59
Table 9. Obstacles related to the domain	60
Table 10. Personal abilities to deal with field requirements	60
Table 11. Field's approach to environmental art	63
Table 12. Field's recognition of creativity and value	66
Table 13. Autonomy of the field	68
Table 14. Access to resources in the field	69
Table 15. The field and bright people	71

ACKNOWLEDGEMENTS

I would like to recognize the invaluable assistance of Dr. Iva Pires and thank her for her supervision and support. I also would like to thank my parents, whose constant love and support keep me motivated and confident, all very necessary for me to finally deliver this thesis. My accomplishments and success are because they believed in me.

INTRODUCTION

In times in which climate change, resource depletion, pollution, and biodiversity collapse are a pressing reality, the demand for change is echoing in most corners of political and governmental institutions, media, not-for-profit organizations, and in our community as a whole. Unfortunately, there is a clear and wide gap between the demand for change and the actual process of developing a new way of behaving and understanding the world we live in.

The process of changing has creativity at its core, and creativity, here, should not be understood as the capacity of generating original thoughts, although this is an important aspect of it. Creativity is a much more complex and more complete process, and it encompasses the generation of a novelty that is valuable, as well as the implementation of such novelty in a practical manner. Therefore, creativity here is getting farther from the mere cognitive aspects of it and getting closer to what is called innovation.

Creativity is also a systemic process, meaning that it is not an isolated phenomenon that can be fully generated or understood through a single individual insulated from its culture and society. Mihaly Csikszentmihalyi (1988, 1998, 1999) proposes a systemic view of creativity, and it is supported by three pillars: domain, individual, and field. Such a systemic view implies that our socio-cultural context affects creativity and vice-versa, so how does this demand for change and for a more sustainable way of living influence creative processes? How are creative processes being shaped by socio-cultural forces? What are the elements that enable and block the creation of change?

One of the most creative areas that offer the possibility of answering some of these questions is the arts, more specifically the environmental and ecological arts. The artistic sphere is known for demanding and generating creativity, but it also brings in its core the forces of the market and the influence of art critics, curators, and gallery owners.

But besides being an interesting group to be analyzed, environmental and ecological artists are part of the foundation of a new way of living in this world, unfortunately, a not so recognized one. While we pay attention to technological development, scientific discoveries, and governmental policies, which are all deeply essential for advancing sustainability, we should also recognize that actors working on the transformation of culture and on the creation of new ways of understanding who we are and how we connect to our biosphere are also carrying on their backs a crucial aspect of a sustainable society.

Environmental and ecological artists are stronger communication agents than most researchers, politicians, and companies, and they are stronger because they don't communicate with rationality, but with heart, with emotions, with all our embodied senses, creating a much stronger empathy and connection between public and subject. So the understanding of how the system affects the creative achievements of this group of people is fundamental for a deeper comprehension of the gap between demand for change and actual behavior change around environmental issues.

This research aims at understanding how systemic forces influence creativity in environmental and ecological art, as well as understanding how these forces limit or promote creative achievements in these areas, leading to a reflection on the socio-ecological consequences of such influences.

HOW CREATIVITY WORKS

What Is Creativity

Our most important mental talent is the ability to imagine what has never existed. Most of us take this ability for granted, but it actually defines our lives, as most of the human inventions were born from it. But although we live surrounded by our creations, and we ourselves develop the process of imagination and creation regularly, there is something profoundly mysterious about creativity. The fact that we don't understand the process of creativity, even when it happens to us, has made us associate it with external forces (Lehrer, 2012).

Until the Enlightenment, imagination was deeply connected with higher powers, and being creative meant to channel muses and to give voice to ingenious gods, ideas that could be found at the very roots of the word inspiration: breathed upon. As people couldn't understand the origins of their creative endeavors, they assumed the ideas came from somewhere else and that imagination was outsourced (Lehrer 2012).

The concept of creativity and the phenomenon itself have always brought conceptual and empirical challenges to the table. The diverse conceptual paradigms of philosophy have caused struggle with the concept of creativity, and psychological empirical approaches such as asking artists to explain how they are creative have failed to bring clarity to the matter (Radford 2004).

Creativity is difficult to measure and quantify, but it is not impossible, and creativity researchers have been for the last 60 years nearly unanimous in their definition of the concept (e.g., Stein 1953; Runco and Jaeger 2012; Amabile, 1996; Kaufman and Sternberg 2007): Creative thought or behavior must be both novel/original and useful/adaptive. Originality per se is not sufficient, as there would be no way of distinguishing eccentric or schizophrenic thought from creative. To be classified as creative, thought or behavior must also be useful or adaptive, but usefulness is not meant in merely a pragmatic sense, as behavior or thought can be judged as useful on purely intellectual or aesthetic criteria (Feist 2010).

Creativity also embraces the proactive devising, formulating, or framing of problems themselves. We can see creativity everywhere, from everyday cleverness, to arts and sciences, to business and education; and as technology starts to dominate most routine tasks, our society calls for creativity in current and future generations of workers and citizens (Florida, 2002; Moran 2010).

It is important to recognize that there are enormous individual differences in the way people generate creative products. Some individuals produce more creative outcomes and with higher

quality than others, and a limited few achieve extreme levels of accomplishment. Also, creativity is diverse because there are different directions, degrees, and domains of creative contributions. Ward and Kolomyts (2010) mention the work of Stenberg and colleagues as an example, in which they propose the propulsion model, that distinguishes different types of creative contribution, such as replication (reproduction of existing works), forward incrementation (moving a domain ahead by a small extent), and reinitiation (moving a domain to a totally new starting point).

Theories of creativity generally differentiate between levels of creative magnitude, such as smaller c for more subjective creativity, and Larger C for more objective creativity. Big-C Creativity is eminent and refers to unambiguous examples of creative expression, such as Dickinson's poetry or Freud's psychology. Little-c creativity, on the other hand, focuses on everyday life, in experiences and expressions that are accessible to most people, such as a novel way of home cooking a recipe, which is later praised by family and friends (Kozbelt, Beghetto and Runco 2010).

But such dichotomy between Big-C and little-c can lack nuances, and little-c generally cannot differentiate between non-eminent professional artists and those who paint as a hobby on weekends, for example. To address this matter, Kaufman and Beghetto (2009) argued for the addition of two more categories: mini-c and Pro-c. Mini-c captures the idea that even very young individuals or those without much knowledge of a certain domain can construct personal understandings of the world, and that the tendencies that lead to such constructions can be, with appropriate experiences and feedback over time, precursors of little-c or even Big-C creativity (Ward and Kolomyts 2010). The Pro-c category addresses the grey area between little-c and Big-C creativity, as Pro-c refers to those who are professional-level creators who don't have eminent status, but who are well beyond little-c creators in knowledge, motivations, and performance (Kozbelt, Beghetto and Runco 2010).

Creativity can be defined as a complex process of informational processing that happens within a given framework. Such a framework is important because it provides a context that gives sense to the process of managing information, therefore, frameworks offer possibilities within which information can be combined and separated, grouped, and regrouped, while also defining boundaries of what makes sense both within space and the given parameters. Margaret Boden suggests that we can be creative by playing around with variables within a conceptual space, therefore generating various possibilities of meaningful articulations (Radford 2004).

Another way of looking into creativity is to observe how creative thoughts and actions engage in the high-risk process of challenging the rules that shape the space. In this more

fundamental level of creativity, we can think, play or hypothesize at the boundaries of sense, maybe leading to a change in such boundaries, finally transforming the conceptual space. Such changes might be small, but sometimes they reach dramatic scales that generate major transitions in human thought and expression (Radford 2004).

This context brings questions that are very relevant to this field of knowledge. How do we generate novel combinations and reorganizations of information within the conceptual space, and how can we recognize the generated novelties as sensible and valuable within the system? How are original articulations that stand at the boundaries of the sense-making system constructed? What guides us and how are we guided when we try to make sense at its very boundaries? How do we make sense of an activity, a new scientific theory, or a work of art when it challenges the very principles that govern its sense in the first place (Radford 2004)?

Systems Model of Creativity

Creativity has been traditionally viewed as a mental process, as the insight of an individual genius. Psychologists have understood creativity as something that consists of breaking down conceptual paradigms while solving problems, but such approach doesn't do justice to the phenomenon of creativity, which is cultural and social, just as it is psychological. The paradigms and problems addressed by creativity come from a context, a social system. Creativity cannot exist in a vacuum, because something can only be new in relation to what is old. Without norms and standards, there can be no variation and excellence. So although there is a mental process involved in creativity, it must take place in a context of previous cultural and social achievements (Csikszentmihalyi and Wolfe 2000).

But creativity research has been increasingly informed by a systems perspective (Csikszentmihalyi 1999). Some of the broadest and most ambitious theories of creativity understand that creativity is best conceptualized not as a single entity, but as part of a complex system that integrates subcomponents, and all of them should be taken into account to reach a meaningful and valid understanding of creativity. Thus, systems theories usually have a very broad and qualitative contextual view of creativity (Kozbelt, Beghetto and Runco 2010).

It started with Morris Stein observations (1953) and the extensive data that was presented by Dean Simonton in 1988 and 1990, demonstrating the influence of economic, political, and social elements on rates of creative production. Since then, it has become increasingly clear that variables

that are external to the individual should be taken into account in order to explain why, when, and where new ideas and products come to life and become established in a culture (Gruber 1988). Magyari-Beck has gone as far as suggesting that, because of its complexity, creativity would deserve a new discipline called “creatology”, in order to be thoroughly understood (Csikszentmihalyi 1999).

One seminal theory is that of Gruber, first argued with a thorough work on Darwin, and also presented with colleagues later (Gruber 1988; Gruber and Wallace 1999), who developed the evolving systems approach to creativity. This theory is mainly used to understand the unique attributes of a creative person, by studying detailed archival case studies of personalities like Darwin. The evolving systems approach is less interested in understanding the characteristics of a specific creative act than in how these characteristics work in the context of a creator’s goal, knowledge, and reasoning, as well as the larger social forces and creative paradigms (Kozbelt, Beghetto and Runco 2010).

Harrington argued for an ecological approach to creativity by comparing the influence of biological ecosystems on organisms with the influence of social environments on the creative person. Based on this metaphor, creativity is described as a psychosocial process with its pillars on both individuals and their social contexts. Still exploring this ecological metaphor, Harrington discussed the importance of organism-environment fit in the creative process, and also how creative people can shape their environments (Csikszentmihalyi and Sawyer 1995).

When Csikszentmihalyi started studying creativity decades ago, he, like most psychologists, was convinced that creativity was a purely intrapsychic process, based on thought processes, emotions, and motivations of the creative individuals. But over the years it became clear that it wasn’t that simple, because a longitudinal study with artists has shown that the most potentially creative individuals had stopped doing art and pursued ordinary occupations, while others who seemed to lack creative personal attributes persevered and eventually produced works of art that were considered as important creative achievements. The study has also shown that, while young women in art school had as much creative potential as their male colleagues, sometimes even more, 20 years later none of the women had achieved outstanding recognition, while several men did (Csikszentmihalyi 1999).

The conclusions show that one cannot study creativity by isolating individuals and their products from the social and historical context in which they were born. This is true because what we call creative is not the result of individual action alone, as it is the product of different shaping forces (Csikszentmihalyi 1988). Psychologists have always known that good new ideas do not

necessarily become accepted creative products, but two different lines of thought have been generated over this fact. The first was argued by Abraham Maslow and it denies the importance of public recognition, by understanding that it is not the outcome of the process that matters, but the process itself. To Maslow, a person who reinvents Einstein's formula for relativity is as creative as Einstein was, and a child who sees the world with fresh eyes is creative as well, because it is the quality of the subjective experience that determines if a person is creative, not how the world judges it (Csikszentmihalyi 1999).

The other line of thought is carried by Csikszentmihalyi, and he believes that while the quality of the subjective experience is the most important dimension of the personal life, creativity should not be assessed with reference to it. If creativity is to retain a useful meaning, it should refer to a process that results in an idea or product that is recognized and adopted by others. This means that originality, fresh perceptions and the ability to think divergently are good and desirable personal traits, but without public recognition they don't constitute creativity (Csikszentmihalyi 1999).

If you want to know how creative products come to life, knowing how creative a person is might not be enough. Studying individuals to determine how creative they are is just part of a more complex system, and creativity cannot be understood unless one takes into account the impact a person has in his or her community of peers, the traditions from which the novelty comes, and the contribution society made to the individual's ideas. Creativity, then, is a social construction (Csikszentmihalyi 2014).

Csikszentmihalyi (1988, 1999) has proposed a systems theory model that has influenced many researchers, like Gardner, Sawyer, Seitz, and Simonton. His theory involves many different factors and takes a broad view of the phenomenon of creativity. Csikszentmihalyi's systems view emphasizes the pervasive role of place, or environment, on creative processes, and it understands the nature of the creative person as dependent on how individuals other than the creator collaborate to the emergence of creativity (Kozbelt, Beghetto and Runco 2010).

Csikszentmihalyi (1988) introduced his systems view by reframing the basic question of "What is creativity?" to "Where is creativity?" So instead of regarding creativity as an intrinsic attribute of particular artifacts, Csikszentmihalyi argued that creativity judgements emerge through three different interacting components: 1) the domain, or body of knowledge in a particular discipline at a particular time, that preserves and transmits what has been selected as creative and valuable before to future generations; 2) the individual, who acquires such domain knowledge and produces variations on it; and 3) the field, consisting of other experts and members of the discipline,

who evaluate which novelties produced by the individuals are worth preserving for the future generation. Each of these components have a say on the creative process (Csikszentmihalyi 1988; Kozbelt, Beghetto and Runco 2010).

Such a view does not focus on intrapsychic processes and individual contributions, but instead places more emphasis on collaborative creativity (Sawyer 2006) and the societal conditions that can best foster genius. Csikszentmihalyi's systems view also brings light to issues that have gone almost entirely undiscussed in the academic literature, like the importance of "gatekeepers," who could be journal editors or art gallery owners, for example, who play an important practical role in determining which contributions will be given the opportunity to be judged as creative (Kozbelt, Beghetto and Runco 2010).

Creativity, then, is a phenomenon that results from the interaction between these three systems. Without a culturally defined field of action in which innovation is possible, a person cannot even start to be creative. In the same manner, without a group of peers that will evaluate and confirm the adaptiveness of the novelty, it is not possible to differentiate what is creative and what is just statistically improbable or bizarre (Csikszentmihalyi 1988).

The information about what is creative or not does not come from the creative product itself. The reason we believe that Leonardo or Einstein was creative is because we have read or heard that this is the case, meaning that our opinion about what is creative or not is based on faith. We have faith in the domains of art and science, so we trust their judgment on the field. This is not a problem, on the contrary, it is a necessity, but the recognition of such process demands that we accept some of its consequences, like the fact that any attribution of creativity is relative, being grounded in social agreement. This means that social agreement is one of the constitutive aspects of creativity, without which, such phenomenon would not exist (Csikszentmihalyi 1988).

A Dynamic Model Of The Creative Process

Csikszentmihalyi (1988) represents the set of relationships that constitute creativity through a map that can be seen in Fig. 1. The author emphasizes the fact that the relationships shown in the figure are dynamic links of circular causality, meaning that each of the main systems, person, field, and domain, affects the others while also being affected by them.

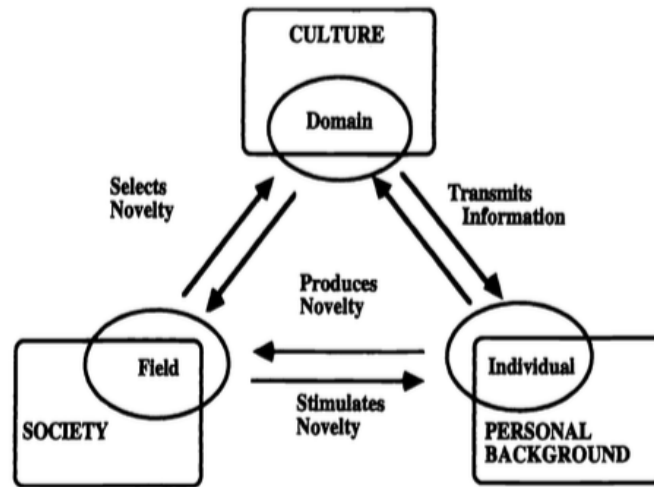


Fig. 1 The systems view of creativity

Source: Csikszentmihalyi 1999, p. 315

This “map” shows how interconnected the three systems are, determining together the occurrence of a creative product. For creativity to occur, a set of rules and practices must be transmitted from the domain to the individual. The individual, then, must produce a novel variation in the content of the domain. Such variation must be selected by the field to be included in the domain (Csikszentmihalyi 1999).

The Domain

As this figure is dynamic, the present starting point is purely arbitrary. It could have started from the “person,” because this is how creativity is mostly portrayed, with an idea beginning in someone’s head. But any information that goes into such idea existed long before the creative mind used it. The information is stored in the symbol system of the culture, in the customary practices, the language, the specificities of the “domain”. Without access to these kinds of information, a person cannot make a creative contribution (Csikszentmihalyi 1988).

The domain is a necessary component of creativity, once it is impossible to make a creative contribution in the absence of a symbolic system. Original thought cannot happen in a vacuum, as it has to operate on a set of rules, representations, and notations. One can only be a creative in any given domain because one can evaluate the performance of creative endeavors by reference to the relative domain’s tradition. With no rules there is no exceptions, and with no tradition there is no novelty. What we call creativity always involves changes in the symbolic systems that form our

mental structure, so a change that does not affect the way we think, feel, or act cannot be creative (Csikszentmihalyi 1998).

Creativity happens when a person can make a change in the domain, a change that will be transmitted through time. Some people are more likely to generate such changes, either because they have specific personal qualities, or because they are well-positioned on the domain by having better access to it, or because of social conditions that allow these people free time to experiment (Csikszentmihalyi 1998).

The Person

The “person” on the system contributes to the creative process by producing some variation in the information inherited from the culture. The source of such variation may come from inherited or learned cognitive flexibility, persistent motivation, or some rare event in the person’s life. These are the aspects that are most frequently studied by psychologists interested in creativity, but by itself, the process of generating variation cannot reveal what creativity is about, because by focusing on the individual out of context does not allow the observer to evaluate the produced variation (Csikszentmihalyi 1988).

An insight is generally understood as something that occurs when a person is exposed to new information that results in a new way of looking at a problem or phenomenon. Most studies on this matter have been made by psychologists, following the tendency to focus on cognitive processes during and leading to the moment of insight. It has been generally assumed that this moment occurs when the person is alone, therefore being studied as a cognitive process that happens in isolation (Csikszentmihalyi and Sawyer 1995).

But Csikszentmihalyi and Sawyer (1995) expand out from this moment in time while also embedding it within other relevant stages of the creative process. The complete “life span” of a creative insight, although feeling like a short flash, is actually entangled in a complex, time-consuming and fundamentally social process. It is true that most creatives do report their insight moments as solitary ones, maybe happening during a walk, while taking a shower, or while lying in bed right after waking up, but these reports are usually embedded within a more complex narrative that describes the effort preceding and following the insight, stressing the salience of social and interactive factors (Csikszentmihalyi and Sawyer 1995).

During interviews with creative individuals, the respondents described moments of creative insight as something that occurs as a four-stage process. The first stage is the hard work and research preceding the moment of insight; the second stage is a period of idle time alone; the third stage is the actual insight; and the fourth stage is the hard work required to bring the idea to fruition.

Both periods of hard work, at the beginning and at the end, are essentially social, with deep roots in interaction with colleagues and the individual's internalized understanding of the culturally constituted domain. The balance of hard work and idle time can be also seen as a balance between social interaction and individual isolation (Csikszentmihalyi and Sawyer 1995).

When psychologists analyze the insight process without attempting to represent social influences, it is hard to answer to basic questions such as how the person integrates the insight with an ongoing domain of scientific or artistic activity, or to what extent the preparation stage is dependent on the symbolic domain or on the social group within which the individual works, or how an insight can be evaluated unless the person uses an internal comprehension of the domain (Csikszentmihalyi and Sawyer 1995).

While many psychologists choose to research creativity as an individual trait, the system model enables a more coherent understanding of a person's contribution to the creative process. First, it brings to light the fact that one can only offer a creative variation after he or she has access to a domain and engage in the required learning of its rules. This means that motivation is very relevant, just as cognitive factors, and they interact with the state of the domain and the field (Csikszentmihalyi 1998).

Second, the system model reaffirms how important individual factors are to the creative process. People who are likely to innovate tend to have personality characteristics that favor the breaking of rules, and divergent thinking, problem finding, and many other factors explored by psychologists are relevant in this context (Csikszentmihalyi 1998).

Finally, one very important aspect that a creative person should have is the ability to convince the field about the value of the novelty one has produced. So it is easier for someone to make a creative contribution if one has access to the field, the network of contacts, the personality traits that favor creativity and that enable one to be taken seriously and the ability to express oneself in an intelligible way (Csikszentmihalyi 1998).

The Field

The "field" has the task of selecting promising variations and to incorporate them into the domain. The field includes all the people that can affect the structure of such domain. The field of art, for example, is composed by art teachers, art historians, art critics, collectors, gallery owners, museum curators, and the peer group of artists. So the field of art, just like any other field, is composed of a network of interlocking roles, with some of them having a better chance of

incorporating selected variations into the domain. The people who have this privileged position act as "gatekeepers" to the domain (Csikszentmihalyi 1988).

Every field is embedded in a specific social system, and the resources of a larger society help to support the recognition of new ideas. A community is more likely to do so when there is disposable wealth as well as disposable attention, as people need money and time to take an interest in a domain (Csikszentmihalyi 1988).

But most novel ideas will be quickly forgotten, because changes are not adopted unless they are approved and defended by the group entitled to decide what should and should not be included in the domain. These gatekeepers are what is called the field. This term is generally used to describe a discipline or kind of endeavor, but here the term has a narrower sense, being used only to describe the social organization of the domain, or the teachers, critics, journal editors, agency directors, curators, and foundation officers who decide what belongs to a domain and what doesn't. At every level, from the drawings of small children to Nobel Prize nominations, judges are assessing new products and deciding if they are creative, meaning if they are enough of an improvement to be included in a domain (Csikszentmihalyi 1998).

Needless to say, fields will differ in the rigidity of their selective mechanisms, the sensitivity of gatekeepers, and the dynamic of their own organization. It also follows that a field with diffuse selection criteria, or one with gatekeepers who are not very respected, will have more difficulty in establishing the creativity of a new idea. Also, a new idea will face difficulties in being recognized as creative in cases in which the field is defensive, rigid, or is part of a social system that does not encourage novelty (Csikszentmihalyi 1988).

Fields vary in many dimensions, such as the extent to which they are autonomous. Some fields can make creativity judgements related to their own society, while others mainly meditate the public opinion. The autonomy of a field is connected to how codified its domain is, so if a domain is arcane or highly codified such as molecular biology, the creativity judgement will be made by a relatively small field. But if we are talking about movies and popular music, domains that are very accessible to the general public, the specialized field won't be able to decide which work will be creative. For the same reasons, creativity is more ephemeral in the arts than in the sciences (Csikszentmihalyi 1998).

Another important variation among fields is how open or close they are to creativity. The openness of a field depends on its internal organization as well as in its relation to the wider society. Institutions that are highly hierarchical and value the knowledge of the past usually see creativity as

a threat, and this phenomenon can be seen in some religions, academies and certain businesses that seek to give leadership to older individuals in order to avoid change (Csikszentmihalyi 1998).

Besides autonomy and openness, there are other characteristics of a field that will make it more or less likely to accept creative products. One that should be highlighted is the access to resources, because a field is more likely to attract creative people if it offers scope for experimentation and rewards in case of success. Even though creative people enjoy working in domains for its own sake, the attraction of money and fame should not be discounted (Csikszentmihalyi 1998).

How central a field is in terms of societal values also determines how attractive it is to new people that are willing to innovate. Currently, bright young people are attracted to a variety of contrasting domains, but all of them have widespread ideological and/or material support. While some may be attracted to computer science because it provides exciting and intellectual challenges, others are attracted to oceanography because it might help to solve many environmental issues. This is important because any given field that is able to attract a big number of bright people is more likely to witness creative breakthroughs (Csikszentmihalyi 1998).

Implications of The Model

Those who may be more used to the person-centered approach on creativity might feel that this systemic approach is a betrayal of psychology in favor of historical or sociological approaches. But the objective is not to leave psychology behind, but to understand the complex context in which people operate, eventually enriching our understanding of creativity, in which the person is part of a system of mutual influences and information (Csikszentmihalyi 1988).

The Domain Level

This approach brings to light many questions that are usually ignored in creativity research, but might hold important findings. When focusing on the domain, some of the important questions are “What are the diverse ways in which information can be stored and transmitted, and how does the structure of informations affect creativity? Concepts and measures need to be developed in order to evaluate the structuring of information and its impact on creativity, as well as to discover which symbol systems are better able to store and transmit creative ideas (Csikszentmihalyi 1988).

Another important aspect that needs to be understood is how access to information is differentially open to different categories of people, aiming to make past creativity available to as

many people as possible, in order to boost future creativity. More important to this research, though, is the question of how to motivate people to engage with particular domains. What is trying to be learned with this question is not how to provide extrinsic motivations, like money and recognition, things that would be concerns of the field, but how to ensure intrinsic motivation, which is based on how attractive an information is presented. If someone is bored by a domain, the amount of potential creativity of an individual won't be enough to generate the interest and effort that are necessary to make a creative contribution. The ability to attract and sustain interest depends on how well the domain is internally organized, and there is a lot to be learned about the specific motivational values of different ways of patterning information (Csikszentmihalyi 1988).

The Person Level

The main conceptual question on the level of the person is "How do some individuals can produce a greater amount of variation in a given domain than others?" To answer this question, motivational, affective, and cognitive variables should be evaluated. It is likely that some children are born with more sensitivity to certain kinds of stimuli, therefore being more advantaged to dealing with memes connected to what they are more sensitive to. It is also likely that early experiences and demographic variables such as social class, sibling position, and religious upbringing will affect their potential. The importance of problem finding as an approach to creative tasks as well as the ways in which various information processing strategies are used by creative children has been investigated (Csikszentmihalyi and Getzels 1971, Csikszentmihalyi 1988).

Careful studies of truly creative individuals that encompass all the angles of the complex interactions among person, field, and domain and very needed and are rare. Some examples that follow this direction are Gruber's study of Darwin, Getzels and Csikszentmihalyi's longitudinal study (1976) of young artists, and Feldman's continuing investigations of prodigiously gifted children (Csikszentmihalyi 1988).

The Field Level

It is probably true that we might know less about the effects of social systems on creativity than about the other two levels of the cycle. The important questions here are related to what forms of organization facilitate the selection of new variants and their inclusion in the domain. Some aspects have started to be recognized, such as the extensive support system that is needed in order to master skills in any given domain, the social roles and personality types that determine success in the field, and the relationship between features of the social system and the frequency of creative behavior (Csikszentmihalyi 1988).

Some important questions related to the field are ‘Who is entitled to decide what is creative? How creativity can be influenced through the attributional process? What does it take for a new meme to be accepted into the domain (Csikszentmihalyi 1998)?

It means that psychologists studying creativity have began to understand how important the systemic approach is. Because of that, other fields of study, like the history of ideas, organizational sociology and cognitive science are being integrated in order to have a stronger sense on the issue. The systems approach demands that its researchers become versed in the skills of different disciplines, because the return in knowledge is worth the effort (Csikszentmihalyi 1988).

The Roles of Creativity in Society

Despite the growing discourse related to creativity among practitioners, policymakers and scholars, surprisingly little attention has been paid to the question of why. Why value creativity? What is its role in society? What does it do for society? Why society should care about it? Such line of questioning understands creativity as a cause in social and intellectual endeavors, not just as an effect of individual characteristics, social support, or cognitive processes (Moran 2010).

Societies constitute a kind of “knowledge ecology,” as it functions as an information-processing ecosystem in which different types of individuals play different roles in an interdependent information and resource processing network. We are now facing conditions that drive the change of our mental maps, and it happens when our current way of living does not work anymore, and the problems caused by it are massive and pressing. Today, societies face a massive, interconnected crisis that demands an evolutionary learning test, in which we either change or we die (Goerner 2007).

The beginning of the third millennium is transforming creativity into something absolutely critical. Today, we have to deal with age-old problems such as coexistence in an increasingly interdependent world, as well as more recent issues such as increasing world population and environmental issues. We need new solutions and more creativity if we want our species to survive (Csikszentmihalyi and Wolfe 2000).

Western civilization is reinventing itself, because the traditional modern paradigm, with a mechanistic and imperialistic approach to life is failing. A new collaborative learning and ecosystemic view of humanity is rising to take its place. This process of rethinking and rebirth will eventually embrace every aspect of our lives, from business, education, and politics, to spirituality, health, and science. For that, an integration of individual creativity, collective creativity, and

collaborative learning becomes crucial to give birth to the next stage of civilization. Here, creativity means both effective novelty and a natural, individual, and collective process that brings to life the necessary diversity of thought that is needed to generate better ways for the collective societal “mind” (Goerner 2007).

Creativity, particularly collective creativity, is crucial to collective learning, because developing a new way of understanding the world is a group project that requires many minds with diverse perspectives working not only to create a new paradigm, but also to find more effective solutions to our current problems. Collective creativity may work gradually at first, in the form of individual creativity working across the many spectrums of our societies. Eventually, individuals start realizing that many fragments of solutions actually connect and form a comprehensive new picture. Their creative contribution is the integration of diverse solutions into a single, commonsense framework. This framework acts like a lens that shows to the rest of the people a clear and coherent new picture with simple connective logic, so that society can walk towards a new way of living (Goerner 2007).

Our most pressing creative challenge is the development of a sustainable future. It is not about a utopia, a perfect world, it is the creation of a world where peace and the fight of poverty, oppression, insensitivity, cruelty and despair are the structural base of our society (Eisler 2007).

Around the world, millions of people and organizations use their creativity to help in the creation of a more equitable, sustainable, and peaceful culture. But at the same time, the majority of people doubt we are capable of leaving behind the habits that brought to us our current problems (Eisler 2007).

The cultures we create will largely determine if our lifestyles will continue to feed environmental destruction, war and inequality, or if we will build a more sustainable and humane world. Cultures that encourage everyday creativity, or creativity in all people and in all areas (Richards 1999) are essential in critical times. We can either choose to be passive, or choose to use our creativity to create cultures that are aligned with the current requirements of human survival and walk toward greater consciousness, caring, and creativity (Eisler 2007).

We humans are the most creative species on the planet, we are amazing beings that can change not only ourselves, but also the environment. With a clearer understanding of who we are, what we can be, and what is needed for a more just, peaceful, and sustainable global culture, we can use our incredible creative potential to build the foundations of truly civilized cultures. As co-creators of our future, we have in our hands the possibility of creating a culture that is in synch with current social-ecological demands (Eisler 2007).

Purpose is based in values, and values signify the relative importance of goals and ideals. Focusing on purpose is timely and it also reveals how people tend to exhibit ambivalence in relation to creativity. On the one hand, creative persons, institutions, and inventions are praised by leaders, politicians, educators, and the media as those who can save our ill society. People also tend to desire to be more creative at work or in leisure. But, interestingly, studies of creativity and values over the last 40 years have shown that American adults, including teachers, do not value creativity very highly. This happens because creativity is generally associated with deviance, rebelliousness, daring, and independence, and creators might not be dependable or reliable. They hold different values (Moran 2010).

How tolerant and welcoming are we of divergence and the distinctive ways in which creative people present themselves? How healthy and receptive are our societal norms? The answers to such questions are very important, as they define the nurturing or discouraging of creativity in our social settings. Where and how often do we push away creative ideas and creative people in our lives because of inconvenience and threat? And how often do we classify creativity as something abnormal or even pathological, distancing ourselves from what we consider as “different” (Richards 2010)?

Society has many different mechanisms that tend to constrain creativity. One example is societal acceptance of only one ideology in a domain. Such ideology could be political, scientific, artistic, educational, or anything else. For example, when behaviorism was leading the way in psychology, anyone who wrote an article with references on internal states or consciousness would have a hard time getting it published in prestigious scientific journals. This shows that when there is only one dominant ideology, it tends to stamp out others, and the success of such ideology is linked to how well it stamps out creative competitors (Sternberg and Kaufman 2010).

One could easily think that democracy is the governmental format that is most prone to creativity promotion, but although it might be true, there is no guarantee that a democratic society will promote creativity, because where the majority rules, creativity may be suppressed. As creative people potentially make the others feel uncomfortable, creatives may be rejected by any voting procedure. A research conducted by Langlois and Roggman shows that people think the most beautiful faces are the ones that are the most average. The greater the number of faces that were combined by a computer, generating an average face, the more attractive the face became. In the same manner, individuals who are seen as most socially desirable are the ones who represent the consensus of a group, rather than a creative departure from the reigning ideology. Being creative, then, requires deviation from the norm (Sternberg and Kaufman 2010).

One of the consequences of the processes described above is that the ideas that are most rewarded are small advancements, ideas that move something forward, but not too much. This happens because if an idea is identified as being too radical, it is likely to be rejected (Sternberg and Kaufman 2010).

Still, creativity is generally held as good, as it invents and maybe controls the future. With creativity, the future becomes an opportunity, not a threat, at least for the creators. And whether we can recognize a situation as an opportunity may depend in part on what our purpose is. Through our actions, we position ourselves in our future, and our purpose can enable or inhibit our ability to re-cognize, that is, to think again and maybe differently, about a situation, generating opportunities, transforming crisis into learning experiences, obstacles into challenges, supports into assets (Moran 2010).

But to make it, we have to do it together. Not only because a paradigmatic change involves all layers of society, but also because by cutting off the limits between domains we can go further. The benefit of horizontal interactions and sharing — when people share knowledge across domains — is that it encourages conceptual blending, which is very important for the development of insights. This is a relevant process because, usually, the brain files ideas in categories according to how they can be used, and such ideas are not accessed if we need something that would be applied in another manner. This brain mechanism usually makes us more efficient, but it also keeps us from generating insights. It happens because our breakthroughs often arrive when we apply old solutions to new situations, when instead of keeping concepts separate, we blend them together and trespass on the standard boundaries of thought (Lehrer 2012).

The ability to make separate ideas coexist in the mind is a crucial creative tool, as insights come from the overlap of seemingly unrelated thoughts. They emerge when concepts are recombined and transposed, shifting the rules and the boundaries of domains and of what is possible (Lehrer 2012). The problems we face today and the dimension of necessary change demands the merging of concepts, the breaking of rules, more accessible domains, and more effortful fields.

Creativity needs a society that values novelty and appropriateness together. If creativity is not allowed to exist or to be recognized, its role in society is debatable. This means that the role of creativity in society depends in part on the society in which a potential for creativity exists (Moran 2010). So creativity is the result of a community. For it to emerge, there must be a confluence of both societal and individual forces (Seitz 2003).

ENVIRONMENTAL AND ECOLOGICAL ART

Introduction

For most of the last few hundred years the environment has been largely seen as external to humanity, mostly to be used and exploited, with a few special areas preserved as wilderness or parks. Environmental problems were viewed mainly as local. On the whole the relationship between people and the environment was conceived as humanity's triumph over nature. It was based on the belief that human knowledge and technology could overcome all obstacles including natural and environmental ones. This view was linked with the development of capitalism, the industrial revolution and modern science. As Bacon, one of the founders of modern science, put it, 'The world is made for man, not man for the world' (Hopwood et al. 2005, p. 38). These are the roots of the modern thought, deeply entangled with what is called humanism, forming the knowledge base that originates how we raise our children today and how we see ourselves in relation to the environment.

According to the Oxford English Dictionary (2016), humanism is any system of thought or ideology which places humans, or humanity as a whole, at its centre, specifically one which is predominantly concerned with human interests and welfare, and stresses the inherent value and potential of human life. It is also a variety of ethical theory and practice characterized by a stress on human rationality and capacity for free thought and moral action, and a rejection of theistic religion and the supernatural in favor of secular and naturalistic views of humanity and the universe.

In his book *The Arrogance of Humanism* (1981), Ehrenfeld extends the explanation of what is humanism by saying that it is a supreme faith in human reason and its ability to solve the problems that humans face, rearranging both the natural world and the social dynamics of our species to guarantee that human life will prosper. As seen above, as humanism has an unquestioning faith in the power of reason, it rejects other assertions of power, including not only god and supernatural forces, but also the undirected power of nature. The first two are understood as non-existent, and the last one can be mastered. We can see, here, that there is a strong anti-Nature element on humanism, although this characteristic is not advertised and is mostly seen as an inevitable consequence of the process of being human.

Our modern world fosters individualism and detached autonomy, both as fundamental forms of self-definition. No life is sacred because we do not recognize it as such, and we do not see the Earth as a source of spiritual renewal, being it only resources that must be exploited and consumed. Since birth we learn to be consumers, and as a culture we have failed to create a way of understanding the universe that is life-enhancing. Without a living cosmology it is very hard for us

to keep in mind the sacredness of life, making a relationship with something larger in context and meaning almost impossible (Gablik 1992).

Wolfe (2009) uses Balibar to suggest that, perhaps, the fundamental anthropological dogma associated with humanism is the humanity/animality dichotomy, through which “the human is achieved by escaping or repressing not just its animal origins in nature, the biological, and the evolutionary, but more generally by transcending the bonds of materiality and embodiment altogether” (p. xv).

This humanity/animality dichotomy can also be called the "human exceptionalism paradigm." Manuel-Navarrete and Buzinde (2010) help us understand that this paradigm is the product of a sociological construction that responds to the predominant worldview which generally perceives the biophysical aspects of human existence as threats and manageable inconveniences, or idealizes it through pristine notions of nature. They also argue that these worldviews helped to shape the conventional understandings of human agency, in which ecosystems are caricatured as inhospitable and dangerous places, or commoditized as spaces for controlled recreational activities, consequently enabling independent human agents to perceive modernity as something that frees them from exposure to “capricious” environmental possibilities.

Human exceptionalism is, then, a cultural fantasy that separates men and nature, understanding that humanity alone is not a spatial and temporal web of interspecies dependencies, believing that human nature is essentially constant while humans reshape others, from molecule to ecosystem (Haraway 2008). Nevertheless, human beings have always been, and always will be, organically embodied, and socio-ecologically embedded (Manuel-Navarrete and Buzinde 2010); and we should never forget the well known fact that human nature shifted historically together with varied webs of interspecies dependencies (Haraway 2008).

Individuality and freedom are understood as the greatest achievements of modern culture, and it generates a kind of art that only answers to its own laws: the pure aesthetics with no function. The entire structure of western thinking and culture has been deeply shaped by this assumption of separateness as the foundation of our lives. But today, with the health of the planet in doubt, we need integral awareness in every field. The environmental issues we face today are so pervasive that they demand that the needs of the planet and the needs of the individual become one. We can no longer say that the state of the world has no important bearing on works of art or that our “self” can be separated from it. Art may not be able to “save” the world, but saving the world is not the same as saving the phenomenon “world” itself, which is something that art can do, because art can help us to regain our sense of belongingness to something precious that is worth saving (Gablik 1992).

Gablik cites the English writer Colin Wilson, who wrote in the late 1950s that modern artists must become actively involved in the task of restoring a metaphysical consciousness to our culture, a consciousness that goes beyond materialistic views of the cosmos, such as the ones promoted by mainstream science. Gablik proposes that today the word ecological has replaced the word metaphysical, because the need for restoring awareness of our symbiotic relationship with nature become the most important spiritual and political need of our time (Gablik 1992).

Over the past decade, as the unsustainable development and the global crisis born from it become more obvious, it has become increasingly difficult to ignore effects such as climate change, mass extinction of species, pollution, etc. The interest for ecological issues and related themes is on the rise all over the world and across all disciplines, and the art world is following such trend. In this context, what has been called environmental art, ecological art or ecoart has gained increased attention over the years, and these labels are being used loosely by a variety of practitioners and commentators (Kagan 2014).

The relationship between the arts and the environment is in constant change, also because what we mean by “arts” and “environment” is in continuing flux. The arts, which encompass traditional forms such as painting, film, photography, sculpture, television, architecture, literature, music, dance, and theater, are constantly expanding as new technology makes new media available, such as the internet and virtual reality, providing new platforms for exploration. The environment, environmental change, and especially climate change are very important subjects of political, economic, and scientific work and debate. The connections between aesthetics and the environment have an impact in our feelings, in how we see the world, and they are part of our daily experience of the world (Thornes 2008).

The urgencies before us demand that the old energy of modernism give way to a healing energy of reconciliation. A new sensitivity is emerging at the leading edges of our culture, one that understands our interdependence and tries to grow aligned with it (Gablik 1992). To appreciate the beauty and the fragile characteristics of our environment, as well as our cultural interaction with it, we need to understand how artists have portrayed these subjects in the past and how it has evolved until contemporary representations (Thornes 2008).

Lynne Hull, for example, is an artist who lives and works in Wyoming, and one of her artworks consisted of small, glyphlike symbols etched in rock surfaces of desert areas. The images were incised deeply, so that they could serve as pockets that could hold water or snowmelt. Hull calls them “hydroglyphs” as they store the desert’s most precious commodity, functioning as a water supply for desert creatures to drink. Gablik (1993, p. 243) cites Hull:

“I’ve had a long-standing in earth or site-specific art, but too often it seemed so egocentric . . . it did not seem enough. I felt a growing need to make a positive gesture to the earth. Couldn’t there be a small-scale, nurturing, perhaps even “feminine” land art? Except in a very few stances, all man’s activities are aimed at benefiting himself, as a species or as an individual . . . Hasn’t civilization brought mankind to a point where he could take actions which would benefit primarily other species?”

The hydroglyphs became part of a project of designing “art for animals,” or works that exist in the landscape in a beneficial way because they make small improvements to the habitats of wildlife. Hull also noticed how eagles and other birds of prey are being electrocuted by power-transmission lines, so she developed tall wooden sculptures that are placed out in the landscape, providing perches and nesting roots for hawks, eagles, and owls. Hull has also made floating-island sculptures that contained platforms for nesting waterfowl. All her art projects are made with the help of biologists and zoologists, and she says she loves the idea of making art that helps wildlife (Gablik 1992).

If modernism was developed around the idea of radical autonomy and individual uniqueness, the politics of a connective aesthetics is very different. It understands that the notion of something that holds everything together is lacking. As environmental limits get closer, a new cultural imperative is being argued and fought. To redefine the self as relational, instead of being separate and self-contained, could spark a new stage in our social and cultural evolution. The self that sees beyond personal existence, that rather coexists and embraces community, is the ecological self, opened up to our inherent radical relatedness. The ecological self recognizes and respects the “other”, the one that has not been part of the myth of self-creation that demands a kind of “freedom” that brings with it separation, disconnection, and lack of intimacy with the world (Gablik 1992).

The process of learning to appreciate each moment in time, especially with our frantic daily lives in a fragile global environment, is something that should be pursued to improve human well-being and planetary resilience. In order to learn to care for the environment, as well as to understand shifts in attitudes and environmental concern, we need to appreciate its aesthetic qualities (Thornes 2008).

Faced with the diminishing richness and vitality of life on this planet, the main mission of our times is to achieve a new cultural coding for the ecological age, a more integral language of being. Creating art that is connected with this new code may be the next step of our aesthetic tradition, as art reflects the times. Perhaps the new aesthetics will not be found in museums,

galleries, and beautiful objects, but in some visible manifestation of “the souls” desperate concerns (Gablik 1992).

This development of environmental art is happening in a crucial time, when our environment is being threatened by climate change and other environmental issues (Thornes 2008). Art starts to communicate climate change and its consequences, engaging its audience in a new and interactive appreciation of the natural world (Thornes 2008).

Environmental and Ecological Art

Environmental art is a new genre that describes works of art that are not only directly representational of the environment (e.g., Constable’s Cloud Series, Monet’s London Series, or Cézanne’s Mont Sainte Victoire Series) but also nonrepresentational and performative works of art that are not as much as a direct representation, but a more active engagement of the audience, such as Long’s A Line Made by Walking or Turrell’s Skyspaces. Other artists work on the boundaries of these two types of environmental art, such as Eliasson’s The Weather Project, which can be described both as representational, in terms of representing nineteenth century London fog, while also being nonrepresentational and performative in terms of the audience participation (Thornes 2008).

Environmental art is, therefore, a very useful overarching category that embraces works of art that have been composed of, displayed, in or out of doors, and concerned with the environment. Environmental art can assume diverse formats, such as canvases, photographs, sculptures, videos, films, and natural samples (such as drift-wood, soil, rocks, or mud) (Thornes 2008).

The need for an overarching new genre that describes nonrepresentational performative environmental art is probably more obvious because this kind of work has received diverse labels since the late 1960s, such as land art, earthworks, site-specific art, destination art, ecological art, eco-art, total art, and environmental sculpture. Representational environmental art, on the other hand, has normally just been classified as a form of landscape art (Thornes 2008).

During the past few decades, there has been an important turn away from representational environmental art toward nonrepresentational and performative environmental art. This is a movement that can be seen in the social sciences as well, by a turn toward appreciating and valuing our environment on the basis of landscape phenomenology, for example, from the perspective of individual feelings and consciousness. Whereas traditional landscape art was focused on capturing

our gaze over distant and external objects, which has an aesthetic value, environmental art and environmental aesthetics are more focused on our senses and feelings. Berleant (3, p. 10) states:

“Environmental appreciation is not just looking approvingly at lovely country scenery. It occurs in activities like driving down a winding country road, tramping along a hiking trail, paddling the course of a stream, all these with acute attention to the sounds, the smells, the feel of wind and sun, and the nuances of color, shape and pattern.”

The difference between landscape and environment is clear. While landscape relates to the static physical world, the environment is focused on life and process. Environmental art usually is done at local scale, but the environment can vary a lot in scales, going from local to regional to global, concerning individuals, nations, and the society as a whole (Thornes 2008).

The origins of environmental art grew out of the more representational environmental art of the nineteenth century and the beginning of the twentieth century, and it can be traced back to growth of paintings being done in open air, with artists getting out of the studio and into the environment. Their works, however, were still very indoor, with paintings being hung in walls. Although the artists were assuming an actively passive behavior, they did not seek to change the environment they were representing in their work (Thornes 2008).

During the first half of the twentieth century, modern art went back to the studio and the art gallery. Landscape art had enjoyed great popularity for almost a century, from Turner and Constable to Van Gogh, Gauguin, Monet, and Cézanne; but modern art was not focused on landscape anymore, and most of its artistic movements were no longer dominated by it. Still, landscape remained an important subject as artists started to respond to the fears of the century, like wars, industrialization, the threat of global destruction and the irreparable damage to ecology, with landscapes becoming a way of expressing the desire of spirituality and timelessness, both found in nature (Thornes 2008).

Performative environmental art emerged during the 1960s, using terms like land art, process art, ecological art, eco-art, earth art, earth works, and total art, as it was mentioned before. It is easy to understand why modern environmental art, detailed here as ecological art, was born in the 1960s, alongside environmentalism. Rachel Carson's *Silent Spring* was the first book to challenge the use of DDT, and in 1972 United States actually banned it in the country. During the 1960s, an ecocentric mindset was developed, focusing on antimaterialism, love and respect for the land, the understanding of the Earth as one organism, the extension of the “natural rights” from humans to the rest of nature, the need of an ecological conscience instead of a simple agronomic management, and the desire of the return of an outdoor holistic scientific understanding of the natural world (Thornes 2008).

Ecological art has its basis on ecological ethics and systems theory, exploring the web of interrelationships between the physical, biological, cultural, political, and historical aspects of ecosystems. Ecological art, therefore, is based on a broad interdisciplinary knowledge and is able to appeal to both heart and mind. This kind of art asks probing questions, develops strong metaphors, identify patterns, tells stories, offers restoration and remediation, uses renewable materials and re-imagines systems; ecological artists inspire, support, and innovate on environmental issues, bringing to light ecological relationships while promoting ecological values. Ecological art inspires respect and caring for our planet, it stimulates dialogue, helps on social-ecological transformations, while also stimulates the imagination and construction of a world where the infinite kinds of life forms found on earth may flourish together (Wallen 2012).

The genre of ecological art was originally conceived in the 1990s, looking at practices that emerged from the late 1960s onwards. It covers a variety of artistic practices which can be united, as social-ecological modes of engagement, by shared principles such as connectivity, ecological ethical responsibility, reconstruction, stewardship of interrelationships and of commons, non-linear (re)generativity, navigation and dynamic balancing across multiple scales, and explorations of the fabric of life and its complexity (Kagan 2014).

Helen Mayer Harrison and Newton Harrison, two of the great exponent of ecological art, state as follows (2004):

“We believe that in a well functioning system, cultural diversity and biodiversity exist in a state of mutual interaction – the former self conscious and able to intend and transform, and the latter the pattern of self organization from which we all spring and to which we all return, and which ultimately determines the possible”.

This phase that started in the 1990s and stretches to the present day brings a more direct engagement with environmental issues and a reexamination of the relationships between art, society, and the environment. Ecological art is an important part of recent performative environmental art. Tufnell identifies three creative lines in this phase: the first is a commentary upon environmental issues and creative solutions to related problems, the second offers symbolic warnings and poetic meditations on our current ecological problems, and the third is simply a witness of our situation (Thornes 2008).

While some ecological art works are focused on physical innovation, transformation, and restoration, others are more leaned towards inspiring sociopolitical activism, while others are more conceptual, promoting ecological values and perceptions. Works of art that mix diverse registers simultaneously are generally more impactful (Wallen 2012).

Ecological art, although being a subset of environmental art, refers to a more specific and original meaning, considering also a set of social-ecological practices, resulting in a few salient characteristics (Kagan 2014).

The “ecoart network” is an invitational network and mailing-list that was started in 1999 and today gathers more than a hundred practitioners and other people related to ecoart, among whom are several key personalities of this movement. In 2011, it issued a statement as an attempt at self-definition. It says that ecological art embraces an ecological ethic in both its content and form/material, and that artists who are considered to be working with this genre generally subscribe to one or more of the following principles (Kagan 2014):

- Attention to the web of interrelationships in our environment, encompassing physical, biological, cultural, political, and historical aspects of ecological systems.
- Creation of work that employs natural materials or engages with environmental forces, such as wind, water, or sunlight.
- Reclaim, restore, and remediate damaged environments.
- Inform the public about ecological dynamics and the environmental issues faced by humanity today.
- Offer new ways of understanding and seeing ecological relationships, creatively proposing new possibilities of co-existence, sustainability, and healing.

Some of the general characteristics of ecological art were already described by some art historians, artists, and researchers since the conception of this genre. Kagan (2014) mentions the art historian Suzy Gablik, who made an important contribution in 1991 through her book *The Reenchantment of Art*, in which she highlighted three relevant characteristics of this emerging movement that would come to be known as ecological art:

1. These are “connective” practices, meaning that they cultivate empathy and responsible dealings with both humans and non-humans, rather than affirming an individual self against society. One early work that symbolizes this characteristic is *Touch Sanitation* (1978-1980) by Mierle Laderman Ukeles. In this sense, ecological artists often get involved with ecofeminist philosophy, which from the 1980s onwards, allowed them to overcome the rigid dichotomies of modern world, such as nature vs. culture, developed vs. undeveloped world, man vs. woman, reason vs. emotion, etc. Such a connective quality in ecological art goes beyond the superficial connectivity of “relational aesthetics” (Kagan 2014).

2. These are practices that aim to be reconstructive, generative of sustainable ways of living, and not only deconstructive of our modern social systems. Such reconstructive quality also implies that these practices are generally aiming at being transformative rather than being representative. In the same manner, ecological art cannot be considered useless, in the sense of art for the sake of art, or functional, in the sense of fulfilling already determined functions (Kagan 2014).
3. These are artistic practices that base themselves on ethical responsibilities toward communities, here understood as both human and non-human communities of life (Kagan 2014).

Another important characteristic of practices in ecological art is the shaping of shared spaces for people and other species and the advocacy for such shared spaces, such as commons and ecosystems. These environments demand common care and stewardship through interrelationship. One example of this characteristic is the “trans-species art” of Lynne Hull, which brings participants from multiple species, with human being only one of them. Hull’s work encompasses restoration of wildlife habitats that are co-conceived with the local human communities and tested for suitability by non-humans (Kagan 2014).

Because of these lines of thought, environmental art generally does not focus on the gifts of talented individuals, preferring to focus on the fostering of non-possessive and shared authorship of a process that will eventually have a life of its own. The work developed by the Harrisons since the 1970s can be a good example of this idea. For them, the one who enjoys the art is the land itself, and creativity is understood as a shared flow, amalgamating both individual and collective processes. This way of looking at things is also shared by the values of the “Creative Commons” movement and, in a more general manner, with the collective human management of Commons, that is understood as being beneficial to bio- and cultural diversities (Kagan 2014).

Suzi Gablik (1992) does not defend the work of individual artists either. She is interested in advancing the important paradigm shift that she calls connective aesthetics. It leaves behind the myth of the autonomous individualist that has formed the artist’s identity, the idea of the free and self-sufficient individual that has been an ideal in our culture, and the independent and highly individualized consciousness who seek to impose its own ideas upon the world. Today, we are so deep into the ethos of competitiveness and individualistic modes of thought that most of us, living in a highly capitalist world, have never had an experience of true community.

What is taking place is a new, less specialized, and less monocentric idea of the artist, affirming our radical relatedness. We need to cultivate the connective and relational self thoroughly. It is time to revise the cultural myths that guide us. Institutional models focusing on product

development and career achievement have also generated art that is based on power and profit. Individualism and freedom were the symbol of modernism, but they are not the creative response that our planet needs now. Our current social-ecological context demands complex and sensitive forms of interaction and linking, a consciousness that is different from the structural isolation of individualism. The emerging ecological view is no longer isolated and self-contained, but relational and interdependent (Gablik 1992).

It implies art that is rooted in a “listening” self that challenges the isolationist thinking of our culture, focusing less on individuals and more on how they interact. Art that is based on this notion of interconnectedness and intersubjectivity, or the intertwining of self and others, has a quality of relatedness that can only be fully realized by dialogue, as an open conversation. Monologue has lost its place (Gablik 1992). Kagan (2014) shows that ecological art carries these principals defended by Gablik, as well as complementary ones:

- As said before, eco-artists are interpreters of interdependence, abdicating from the idea of independent modern heroes. They value the idea of regeneration and they highlight systemic effects. They act as cooperators of life’s creativity, what the Harrisons call “conversational drift”, referring to the processes that can emerge with the artwork. One example of such idea is how conversational drift facilitated the re-appropriation of Helen and Newton Harrison's Green Heart Vision (1994-1995) by Dutch policymakers, which worked towards the implementation of a biodiversity corridor around the “green heart” of Holland’s Randstad (Kagan 2014).
- They generally do not draw a clear divide between nature and culture, overcoming simplifying dichotomies. But eco-artists also don’t mix living ecosystems with non-living cybernetics, which is generally done by other artists who focus on technology. This means that there is an avoidance of collapsing reality into uni-dimensional thinking or rigid dialectics (Kagan 2014).
- Eco-artists are inter and transdisciplinary practitioners, both when working by themselves or when working in collaboration with other professionals, as it is often the case. Professional collaborators come from very diverse backgrounds, and partnerships can be established with local communities as well (Kagan 2014).
- They practice and value embodied learning, meaning that they cultivate wisdom based on sense perceptions, in search for deep and spatialized knowledge of ecological processes in their local specificities (Kagan 2014).
- The process of eco-art is generally interactive, involving exploration and experimentation, being open to all possibilities and to questions that can redefine anything at any step (Kagan 2014).

- The practice of ecological art demands a necessary ecological critique (Kagan 2014).

It should remain clear that the elements suggested here, especially those related to the ecological artists' exploration of the fabric of life's complexity, are present in all practices of all artists who are related to ecoart. Such elements should be understood as signs of certain qualities in these practices which can contribute to aesthetics of complexity and cultures of sustainability (Kagan 2014).

Even though ecological artists share some common characteristics, the practice of ecoart is diverse and artists differentiate themselves in many different ways. While some works of ecological art are based on direct interventions in natural habitats or human infrastructures, others have an approach that is less interventionist at the material level, focusing on expanding human consciousness. Some practitioners engage in politically radical activism, or artivism, developing subversive political agendas that merge with ecological practices, while others prefer to engage with larger sections of the society, maybe including more conservative political forces (Kagan 2014).

In the same manner, some ecological art projects can be closely connected to local, national or international policy, infrastructure, public service or private sectors, while others choose to focus on local communities, working with community mobilization and empowerment in many degrees (Kagan 2014).

How Art Plays A Role In Environmental Consciousness

Many of the environmental issues that society faces today, such as ecosystem collapse, demand a big amount of public investment to reverse. But this kind of investment would only be considered if the general community were supportive, and community support is only likely if the environmental issues are widely understood. The need for effective communication, public outreach, and education to increase support for behavior change and collective action is especially important in relation to anthropogenic climate change. Scientists often find it difficult to communicate their knowledge to the general public, and the role of the arts is mostly overlooked in this regard. Yet, the arts are communicating issues, influencing and educating people, and challenging dominant paradigms for a long time (Curtis et al. 2012).

Throughout history, artists have produced artworks with the objective of taking their community out of complacency, articulating concerns about social justice and other issues, defining, generating, and summarizing debates, while also providing enduring stimuli that continue to inspire people down through the ages. Artists have a history of social activism, and the current

deterioration of our environment is one of the most pressing concerns of many contemporary artists (Curtis et al. 2012).

The association between artists and those who try to protect our natural environment has a long history, and many artists use their work as a communication tool to share important insights into human relationships with nature. Poets and writers such as Henry David Thoreau and William Wordsworth, alongside many visual artists, have been influential in shaping attitudes toward landscape. Today, there is a growing recognition of the arts as an important facilitator of societal transformation to environmental sustainability (Curtis et al. 2012).

The arts have the capacity to synthesize, simplify, and transmit complex environmental information, also making it more interesting and easier to remember. The arts can also give a voice to marginalized perspectives, playing an emancipatory social role and contributing to political change. Another important attribute of the arts is their ability to evoke emotions, which are physiological responses to particular types of sensory experiences. When people become emotional, they usually pay more attention to events, consequently registering the experience in long-term memory. Emotions are also an important influence on environmental behavior. The arts also bear the ability of creating memorable moments and a celebratory atmosphere by emphasizing beauty and wonder of the natural world, celebrating the natural environment. This is why the arts should be harnessed to help to spread the increasingly urgent and ever more difficult messages of global climate change science to the general public worldwide (Curtis et al. 2012).

Artists are able to communicate with large audiences, and their work has been used as an important part of protest movements against war, social injustice, poverty, and environmental issues, among other subjects (Curtis et al. 2012).

The social psychology literature understands the importance of knowledge in shaping beliefs, attitudes, intentions to act, and environmental behavior. Knowledge about an issue increases the awareness of consequences, which is an important factor influencing pro environmental behavior. The role of the arts in educating people has been extensively recognized, and through the communication of scientific and environmental knowledge, the arts appear to have a role in encouraging people to adopt pro environmental behavior (Curtis et al. 2012).

Eco-art has its way of embodying science, and it is essential for both practitioners and critics to understand how science influences the art and how art transmits its ideas ahead. Wallen (2012, p. 237) cites Ernst Haeckel, who defined ecology in 1870, by saying that it means "the body of knowledge concerning the economy of nature—the investigation of the total relations of the animal both to its inorganic and to its organic environment." This definition is not always the preferred one

by contemporary textbooks, but any other cited definition of ecology bears in it the concept of relationships.

Relationships can be understood in three main ways: in terms of cycles of matter (water or nutrients), flows of energy or nested systems, with smaller networks such as populations and communities that are nested in larger ones, such as ecosystems or landscape. Ecologists understand that such relationships change over time, and that feedback loops ensure that changes in one part of the system affect the others. Whole systems, then, evolve as organisms adapt in relationship to one another. In ecoart and in activism, ecological relationships are generally invoked as a way to understand and fortify relationships to place (Wallen 2012).

Aldo Leopoldo (1949) has once said that "we can only be ethical in relation to something we can see, feel, understand, love or otherwise have faith in", and ecoart follows this idea by encouraging viewers to work as stewards of the natural environment, by letting the public know about the full scale and consequences of their actions (Wallen 2012).

Ecosystem is the term used to define constellations of relationships in a given place, and Wallen (2012) uses as reference the concept of an ecosystem that was first developed by Tansey, who in 1935 defined it as "the whole system (in the sense of physics) including not only the organism-complex, but also the whole complex of physical factors forming what we call the environment of the biome—the habitat factors in the widest sense."

Another central concept of ecology is the idea of equilibrium or balance within systems, which has become more problematic to define. In the contemporary perspective, balance is viewed as a dynamic equilibrium, with multiple stable points. Severe perturbations that cross the limits of a system may upset balance, originating tipping points that cause the system to be reorganized in a very different, and perhaps less complex, environmentally degraded state (Wallen 2012).

Ecosystems can be interpreted as chaotic or complex, but we should recognize that what can be seen as random chaos are actually organized patterns, known as strange attractors. Ecoartists can be relevant by identifying and exploring the implications of such patterns. Helen and Newton Harrison, for example, work by identifying large-scale patterns, which they describe through strong metaphors, such as Peninsula Europe, Serpentine Lattice or Green Heart of Holland. Then, responding to the questions born from these metaphors, the couple creates larger narratives that recommend actions to foster ecological well-being (Wallen 2012).

Because homeostatic ecosystems are hard to identify and to quantify as units, biologists have increasingly advocated for biodiversity as a measure of the health of ecosystems. The preservation of biodiversity became the central field of the new field of conservation biology,

rapidly becoming a widely championed cause. Biodiversity offers a striking measure of human impact in natural environments, and today we have many scientists positing that humans are causing the sixth great mass extinction on the planet, with a rate of extinction 100.000 times higher than the natural rate (Wallen 2012).

But there should be some caution on making art with focus on biodiversity, because it may shift from the holistic and systemic thinking prompted by the ecosystem's concept, to a focus on individual species. Calculating biodiversity is appealing because it provides what looks like a simple quantitative measure, mirroring our materialist culture. But the return to the emphasis on single parts or objects can weaken the concept of biodiversity, even more if in comparison to the concept of ecosystem that is understood in terms of relationships and patterns (Wallen 2012).

But diversity can be a measure of many other variables as well, like genetic, molecular, morphological, habitat, or ecosystemic biodiversity, but also of human attributes such as cultural and linguistic diversity. If biodiversity is understood as the sum of these interconnected variables, it not only enhances the relevance of each individual species or attribute, but also establishes the value of diversity in all of these components that compose a system, reaffirming the importance of ecosystemic complexity (Wallen 2012).

The concept of sustainability may offer a strong perspective, because it takes the essential step of placing humans within ecosystems, instead of presenting natural environments as something outside of human domains, and therefore something that is not intrinsically of human concern. But an issue with the concept is the popularity and openness of the term, shadowing the need of a precise specification of what is desirable to sustain. The Brundtland Commission of the United Nations on 20 March 1987 simply declared: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs". This definition is open to many interpretations, as well as the managerial ethos of "multiple use", informing many governmental agencies. An inherent problem is the fact that it initially gives non-human beings no standing besides an utilitarian one, being viewed as resources (Wallen 2012).

In practice, sustainability promotes relation, systemic thinking, integrating hard sciences, political, and economic realities into ecological frameworks. The 2005 World Summit defined ecological, social, and economic demands as the three pillars of sustainability. This is important because such understanding of sustainability links it to social justice, placing human suffering such as poverty, malnutrition, lack of education, and disease, in an ecological perspective (Wallen 2012).

The current economic crisis enhances the challenge of addressing economic and social pillars while also promoting ecological sustainability. The search for alternative economic systems is present in many corners (Wallen 2012).

Ecology can be understood not only in terms of scientific principles, but also as the basis for ethical action. Ecoart can play a significant role by encouraging dialogue and offering alternatives of a desirable sustainable future, both being informed by and informing an environmental value system or ecological ethic, as well as the idea of ecological justice. Ecoartists can meet this challenge by challenging the status of distanced observer that is popular in Cartesian science while encouraging us to get dirty, by combining scientific understanding with sensual awareness to reawaken embodied relationships and innovative responses (Wallen 2012).

Today, many artists embrace a public presence and the need of active collaboration of scientists and government officials. Ecological art is a call to recognize the gravity of the current ecological crisis, as well as the necessity of visionary responses with potential to change behavior, policies, and values. Ecoart brings to light the wonder of the myriad of living forms and the sadness of their disappearance. But instead of ignoring present challenges, artists use fearless questioning in order to free imagination and spawn creative responses (Wallen 2012).

New metaphors and dialogues mediated by art question reified relationships while generating new ones. Fresh narratives inspire further change and innovation, and values and ways of understanding the world may shift as new knowledge emerges. Ecological art, therefore, is a growing force in the shaping of values, visions, and innovations for a sustainable life that ensures the well-being of future generations of the diversity of life forms living on this planet (Wallen 2012).

But until this day, only a small number of contemporary scientists use the arts in a practical way to help in the development of their research, either by gaining insights that feed into their research, or to communicate their research to the general public. Nalini Nadkarni researches the biota of forest canopy, and she establishes connections with diverse audiences outside the scientific sphere as well as with artists, with the purpose of increasing awareness of canopy ecology. Other scientists merge an interest in aesthetics and science. Some scientific organization in the UK and in Australia have hosted artists in residence who have created works inspired by science. Collaborations between art and science include the Colorado EcoArts festival (www.ecoartsonline.org/); Art and Science Collaborations (www.asci.org/), Synapse (www.synapse.net.au/index.php), Gene(sis) project (Stern 2005), Orion (www.oriononline.org/), Green museum (greenmuseum.org/), Australian Network for Art and Technology (www.anat.o

rg.au/), and the Mildura Palimpsest (www.artsmildura.com.au/old_sites/palimpsest/pdfs/Palimpsest5.pdf) (Curtis et al. 2012).

Despite the range of collaborations between arts and science around the world, there is only a very small minority of scientists who are actually involved with it, and the environmental and sustainability literature is mostly silent about the role of the arts in mass communicating science (Curtis et al. 2012).

Art And Creativity

Seitz (2009) starts a reflection about art and creativity by citing Virginia Woolf, who wrote a book in 1929 called *A Room of One's Own*, and in chapter 4 the narrator relates a view of great works of art that are born from the combined creative inheritance of the community: "For masterpieces are not single and solitary births; they are the outcome of many years of thinking in common, of thinking by the body of the people, so that the experience of the mass is behind the single voice" (p. 65).

But such perspective, as seen before, is not part of the mainstream of contemporary views of creative activities. Just as contemporary views of the nature of intelligence, the general belief both among laypeople as well as among social scientists is that creativity inheres in the individual and is mostly a function of individual constitution (Seitz 2009).

Creative activity is the consequence of the assemblage of cultural domains and political and social institutions that influence directly and indirectly the development of individual creativity. creative products can be always considered a community affair, being it the result of the combined individual intellectual and creative profiles of many individuals, the history of creative ideas and their application to the domains, as well as the field of cultural and political forces that serve their legitimization. The differential distribution of power and resources among individuals and groups, for example, deeply constrains creative activity in art and other forms of creativity (Seitz 2009).

Csikszentmihalyi has developed research at the School of the Art Institute of Chicago (SAIC), one of the premier art schools in the United States, and this work has shown in a practical manner how culture and society influence creativity. A longitudinal follow-up of the former students took place 18 years after the first phase of the research, and it turned out that some of the most promising and gifted art students were working in real estate, teaching, or remodeling houses. One was a plumbing contractor, while the other was designing sweaters. Although their approach to such jobs could be creative, the promise of an independent and creative artistic career that had motivated them in the art school had either never materialized or had been cut short (Csikszentmihalyi 2014).

Another important finding of this longitudinal follow-up showed that, although women students had outscored men in the various creative tests used during the first phase of the research, and they also had better ratings from art teachers in terms of artistic promise, eighteen years later not one of the women artists were known professionally or were exhibiting their work, while at least half a dozen men were getting to be established artists (Csikszentmihalyi 2014).

These findings suggest that in order to get to know how creative products come to life, like how new music is composed, novel books are written, or scientific theories elaborated, knowing how “creative” a person is might not be enough. To study isolated individuals in order to determine how creative they are is like listening to one hand clapping. Creativity cannot be understood unless one takes into account the impact a person has in his or her community of peers, and its causes demand an understanding of the traditions from which the novelty comes from, as well as the contribution society made to the individual’s ideas (Csikszentmihalyi 2014).

Creativity is a social construction. The creativity of a work of art emerges against the background of previous art, or the domain of art. Past traditions are the background from which a new work comes to life, and is also the reference with which it will be judged to be worth preserving in the domain by museums, collections, art books and journals, among others (Csikszentmihalyi 2014).

We should also have in mind that the attribution of creativity is not a democratic process. In most human endeavors, the opinion of a small elite will determine what is new and valuable, what belongs to the domain and what should be excluded from it. This small elite is also known as field, as seen before (Csikszentmihalyi 2014).

Ecological art is gaining momentum as the global ecological crisis gets deeper, being relevant and urgent as a social-ecological practice. Some commentators understand that ecoart is reaching a critical mass (Kagan 2014). Many artists are beginning a radical reevaluation of the institutions and ideologies that give base to our dominant model of culture, whose “business as usual” inevitably puts personal profit ahead of the interests of our social-ecological system. Art itself is deeply involved in this phenomenon, having power, profit, and prestige as its subtext, implicating in its ideology (Gablik 1992).

This means that the practice of ecological art, being so varied and so committed to a shift in our current paradigm, brings with it diverse difficulties and challenges in the relationships between artists and the world of contemporary art. Because of that, a thorough art-sociological analysis of the tensions between the practice of ecological art and the established institutions and gatekeepers in the art world is needed to support the shift towards cultures of sustainability (Kagan 2014).

METHODOLOGY

Objectives

This research project has a general objective to understand the systemic forces that influence creativity in environmental and ecological arts. The secondary objectives of this research are the following:

- Map the forces that influence creativity in environmental art, inside the realms of the domain, person, and field;
- Understand how these forces limit or promote specific characteristics of creativity in environmental art;
- Develop a broad analysis of how such forces direct the development of creativity in environmental art and what are the consequences of such influence in culture, creative individuals, and society.

Methodological Option

The research methodology used follows the qualitative approach. To understand which are the elements that influence creativity in environmental arts, as well as how they affect the development of this kind of creative process and what are the consequences on the system, in-depth interviews were done with 6 artists that can be classified as pro-C (people whose professions are based on their creative processes, meaning that they are professional creatives, in this case, professional environmental artists). The in-depth interviews were semi-structured, meaning that a pre-determined set of open questions were asked more or less in order, but still being open to some flexibility in case the interviewer wanted to explore particular themes or responses further.

The artists were chosen via snowball sampling, a non-probability sampling technique where existing study subjects recruit future subjects from among their acquaintances. There are two requirements that should be met in order for one to be recruited for the interview: being a professional environmental artist, as well as being working in this field for more than 5 years.

Six in-depth interviews were held via Skype during the months of March and April of 2017 with European, North American and South American environmental and ecological artists. All the interviews were transcribed and processed in search of meaning, and this chapter will present the

analysis of such content, followed by the conclusions of this research. The interviewees will be identified here as EA1, EA2, EA3, EA4, EA5 and EA6 in order to protect their identity.

The interviews were taped and a transcription of each of them was done. Regarding the interviews that were done in other languages besides English, the content was then freely translated to English in order for it to follow the main language of the present research. This material was processed and divided into categories or themes, based on valid inference and interpretation.

ANALYSIS OF THE INTERVIEWS

As we have seen before, Csikszentmihalyi argued that creativity judgements emerge through three different interacting components: 1) the domain, or body of knowledge in a particular discipline at a particular time, that preserves and transmits what has been selected as creative and valuable to future generations; 2) the individual, who acquires such domain knowledge and produces variations on it; and 3) the field, consisting of other experts and members of the discipline, who evaluate which novelties produced by the individuals are worth preserving for the future generation.

The interviewees were asked to answer some questions regarding the forces that influenced their creativity in these three major areas, which are also the areas that will be used for the classification of answers, and therefore the analysis of the interviews.

First classification: Domain

By following Csikszentmihalyi's ideas, we can understand that without a culturally defined field of action, one cannot be creative. A person can only be creative when using previously existing information in his or her new ideas, and such information is stored in the symbolic system of the culture, and without access to it, it is impossible to develop a creative contribution. But access is not enough, as one has to be able to evaluate the performance of creative endeavors in a domain's tradition. Creativity is all about change, and something truly creative will change the way we think, feel, or act. So it is very important to understand the references and knowledge in which environmental and ecological artists support themselves, as well as the changes they hope to achieve with their body of work.

When talking about the references and knowledges used by the artists in their work, their answers show that although they are generating environmental content, they prioritize more intuitive, personal and cultural references than what comes from the sciences:

Table 1. Broadly accessible domains

EA1	<p>My work and my research in plastic arts has as a reference the landscape, so from the landscape I elaborate works that unfold in different ways, forms and appearances. [...] My first motto is to do a job that I can put it as a work that is carried out in 2017, and that has a reference in the landscape of 2017, which is the year we are living now. So I have a concern that this work is fairly current. My work always has reference in the landscape, that is to say, in the natural landscape, in the built landscape, in the urban landscape, in the cultural landscape, then it can present or can have as reference these different environments. What I use as a cultural reference is to mentalize what is happening in this landscape, in the global landscape and in the local landscape, what these themes bring in that moment of 2017, what represents this landscape now, how man relates to this landscape, so I go in search of information on this.</p>
EA2	<p>The cultural references used are more intuitive and spiritual, ancestral, than academic or a reference of other artists. The inheritance of Brazilian identity, how to affirm myself as a person, how to identify myself geographically, resulted in various relationships with elements, rituals and stories that began to feed the repertoire of what I do. Besides spirituality, I also research the Brazilian identity. What are the relations of power, of space, of dialogue between people and their origins?</p>
EA3	<p>First is the empirical question and the personal experience itself. There are things that I have had no other start than from personal experience, and of course the empirical field is particular and access is individual and subject to each one of us. [...] I also use a lot of common sense, which is that you live in society, it is to evaluate the parameters that you have of your individual experience, your academic experience and the experience of the other, to look at the other, to think about otherness, which is a very complicated thing, especially in a sexist society like ours, to think of the other, in a capitalist and individualistic society, that does not think about community and collective issues. [...] But what also attracts me are the principles of free culture, the experiences that we have, and how all this can be crossed and hacked, then the mentality is this, is to hack the world, to transform it somehow, not with the illusion of transforming it on a large scale, but at least pointing directions and ways for things to become possible. Tomorrow, if this is going to be a great idea or not, only time will tell, the important thing is you to do it rigorously, consciously, betting also on intuition, which is important, of course.</p>
EA4	<p>When scientists communicate, they use a lot of scientific study materials, so they do all that research and they try to get that across, and then there are approaches that are more appealing to emotions, which is, for instance, a lot of my work. Many works of mine are trying to appeal to people's instincts, because I firmly believe that an understanding of nature is in every one of us, because we are part of nature and this gets overwritten through culture, busy life, living in cities, being very busy.</p>
EA5	<p>In my work the first reference is my own experience, most of my work comes from my own relationship to place, to nature, and our constructed environments, that is what humans have created versus that which is in the natural world. [...] I think that most of the knowledge comes from my own experience, from a visceral response, emotional, psychological, physical, all those types of responses to my own experience in a place, either that place in that moment, or that place over time, typically I tend to photograph in places that I have a long relationship to, and subjects that I feel very connected to, that I have passion for.</p>

EA6 Not necessarily the work has to bring a plant or a living element, an animal, but I think that just by the work being in the landscape already generates a reflection, you already generate a reflection on that work, where it is inserted, and it helps one to think about the world. I think the observation of the world that we live is also an inspiration and a reference [...] I think this reference comes from the observation of the world, I think more than books and images.

Most artists also base their work in more specific kinds of knowledge and domains, with the main one being the domain of the arts, followed by scientific/academic perspectives. But it is important to notice that these are strong but maybe complementary domains in their work, with all of the interviewees emphasizing that most of their references come from intuitive, personal, and cultural realms, as seen above.

Table 2. Specific knowledges

EA1 Another reference I use is contemporary plastic arts, and by contemporary I mean any art practice held now, not contemporary as an art category, I consider contemporary art all that is accomplished at this time, now, I think some have approaches that have, rather, a reference of contemporaneity, while other artistic practices are presented strictly in the field of the plastic arts that do not have reference of contemporaneity, and that could be displaced for any time, then I start from that. And I read many texts on ecological issues, natural issues, issues related to urbanity, which sometimes also involves political issues, economic issues, social issues, these are the references that I can use to build a rationale that will have a content about it, but with an approach from the field of plastic arts.

EA3 The second type of knowledge is academic knowledge itself. The academic field is somewhat collective and individual at the same time, those who have access to the academic field are always a small percentage of people within society, and this academic knowledge guides the principles of research, methodologies, relationships of knowledge, of learning, teaching, guiding and accumulating, forming sediments in memory. Another reference I use is the field of artistic experience itself. It is multi-diverse, so within these individual, collective, academic, life processes in society and community, one has access to a range of information. At first, before the internet, the only access was through books and contacts between people, after the internet that access has expanded greatly.

EA4 I studied art in Germany and did a master's degree here in US, so Land Art is something that I have learned, so that reference is there, and I love the outdoors, especially the American west, and the Land Art movement came out of the American West, so that is the reference, but I don't see myself as a land artist at all

EA5 In terms of knowledge I do a lot of reading, both scientific reading, ecological reading that is science based as well, I also read philosophy and read other people's perspectives, one example would be like Rebecca Solnit, there is other references as well, of course. Cultural references, obviously that relates to other artists' work, work by others in other creative fields, poetry, music, performance, arts, other cultural references, especially related to the built environment would be architecture. I also gain knowledge through conversation, through collaboration, collaboration with other artists, with scientists. [...] As an artist, I use scientific knowledge as a way to inspire me to make work that provides a more intimate and personal experience with that subject of that scientific knowledge, I don't see my work as being didactic, I see it as being experiential. [...] I would say that most of the time its used more as fundamental information to inspire works that are more personal.

The environmental and ecological artists that were interviewed have similar hopes regarding the changes they wish to generate with their work. The hoped changes are all directed to the public, not to the field, and they are focused on provoking thought and reflection, followed by emotions and intuition.

Table 3. How do you think your work generates changes on how we think, feel, and act?

EA1 There is an issue here that is that perhaps the first content of a work is not visible to some people, that audience may have interpretations that come from their own history, from their own baggage. If people are attracted to a particular form, or a sculpture, or any proposed work, they will have readings, even if those readings are not the artist's earliest readings. This will generate an exchange, they will be able to absorb this, and this will generate an increase in reasoning. At the same time, when I get a return from this audience, it always brings me new things, it always brings me approaches that sometimes I may have looked for, or have intentionally worked on, but often brings me other information, other readings. I think there is a two-way street, not only I offer new content or approaches to the public, but also this audience gives me this kind of feedback.

EA2 Through awareness and access to the most ancient repertoire of each, the unconscious. The name of my site is Mata a Dentro, and it is an allusion to this previous forest, to the natural space in which we live, of which we are fruit while we destroy it and we distance ourselves more and more. I believe that now there is a return to this natural space, which exists as a vibration, as an intention. The name is also an allusion to an invitation, because entering a forest is an association with the unconscious, entering a forest means for many to enter into the roots of your perception, entering places you do not normally visit, with hidden forces. [...] I want to make people aware of them, get them to know each other, know where they step, where they eat. I have worked hard from my perspective on garden projects, environmental awareness, and food awareness. Basically, the goal is to set up a method, to set up an intuitive school where people do not see themselves as subordinate to a discipline but empowered to discover the powers they themselves have to know. Some rule drowned out this sensitivity, so let's blossom what's muffled, release the reins.

EA3 I think that the main objective is the human, it is a somewhat anthropocentric thing in spite of the fact that we are living the Anthropocene, but I think our reflection is more in the sense of thinking the reflections

for the society, in proposing reflections for the society, to criticize some situations depending on the human matters itself.

EA4 I think with the work that I do, I am trying to appeal to people's emotions and this deep, deep down instinct to bring that out, to get them to notice nature, to get this feeling back, a feeling that is there but is hidden, but is lost. So, with this work, I am not addressing one specific environmental issue, like, say, water or the pollution of the air, or mining, or oil, or whatever it is, my work is not doing that so much, it is more about environmental understanding, it is more about a feeling, you know? Evoking a feeling for it. These drawings that I do are combined with the landscape and they enhance the landscape, so it is art, but it is also nature, and they are combined, and I hope that through the art in the nature I can open up people's minds and speak to their sense, or their feeling about nature, and I hope that this will trigger them to think a little further and realize that being in nature is really great.

I hope it gets people's minds going about environmental issues and gets them to appreciate the environment more, gets them to realize how amazing the natural world is, how special, how great, and how to be a part of the system, and not destroying it. [...] My goals are to get the agendas I think are important across as many people as possible, to get people's minds going, not so much to tell them "this is how it is", but rather to make them think, to trigger thinking about environmental issues, about environment, about the landscape, about nature, not so much like a scientific diagram that presents climate change, but more appealing to their emotions and senses, and triggering them.

EA5 I hope that my work will stimulate people to think about their relationship with nature in a more connected and profound way, much of my work is very much directed at bringing that connection and that interdependent understanding between oneself and nature, I believe that the fundamental problem in our world is that people think that they are separate from nature instead of realizing that they are nature. I believe that if people realize that the water that is going through their body is the same water that is running through the land, and that the breath that they breath comes to them from the trees and plants on the land and water, that we would think of ourselves and think of our planet in a very, very different way. It is that disconnection with the natural world that I believe that is the basis for people's unhappiness and their disconnection with each other, that lack of realization that we are all connected, that it is all one connected ecosystem. [...] I hope that my work would have people think about their own responsibility for their actions and how they can positively impact change and impact their lives and the planet.

EA6 Here I always think of the following: one does not take care of what one does not know, so for example, if you do not have contact with nature, if you do not know how it works, you have no way to care, you do not know how to care about it, you do not know that it exists, so I think that when I bring some of that repertoire to my work, it's exactly for people to pay attention, look at that and think about it, so I think it's more in order to make matters visible, because most of the times they are implicit, they are invisible, and the very idea is to bring these issues to light, for contemporary discussion and reflection, or from the past to the future, so I believe it is to give insight into these kinds of issues.

Second classification: Person

The “person” is the part of the system that produces some variation in the information inherited from the culture. But why are these people capable of generating such variations while others aren't? What are their motivations and affections towards the environment as a subject (Csikszentmihalyi 1988)?

Another important point of analysis, as seen before, is to understand how creatives deal with an insight, and how much they value social influences in their creative processes, as these questions help us to understand how artists integrate an insight with a domain or a social group (Csikszentmihalyi and Sawyer 1995).

Also, from a systemic perspective, we can assume that a creative endeavor is only creative if the work has been embraced by the field, meaning that the insight process of an individual is not enough if this individual is not able to transform the insight into something of value, and then use his or her abilities to convince the field about the value of the novelty that has been produced. So an important aspect to be analyzed regarding “person” is how they manage their relationships and work processes with the field (Csikszentmihalyi 1998).

The interviewees show that their relationship with nature generally begins during childhood, although some of them also narrate that, although they were close to nature as kids, this relationship needed another stimulus to flourish in them as adults. It is relevant to notice how they see the environmental theme as something urgent and something larger than life. It is not a matter of another interesting topic, it is imperative to talk about these issues, and this is an important factor determining their motivations to move forward, even though there are many difficulties in an environmental artist's life.

Table 4. Origins of the interest in environmental issues

EA1	I've always had a sensitivity to nature, I've always been sensitive to it. I come from a family that had an appreciation for it, so maybe it comes from my family, but I worry about it and it is important for me to be inserted in it, since I am acting with a mechanism that is quite potent that is the plastic arts, I am interested in having a reflection on this moment, and the matters of nature, the ecological issues, there are pressing issues at the moment, these are some of the issues that have the greatest importance right now, and it has an importance that affects everyone.
-----	--

EA2 Artistic or creative skills have sprung up in me since I was a child, and my sensitivity to materials eventually helped me to create diverse narratives. I became interested in the environmental theme because of the abundance of resources available on the streets of the city. While the iron is collected by street dwellers to be sold, the woods stay available, and these are mostly from extraction, no one has planted these trees. I was interested in the abundance of this ancestral forest of millions of years that was generated in the surroundings, and that we were cutting without any reflection, and today it returns to the dumpsters, while the Jacarandás and Perobas are no longer sold legally. When I started, the interest came from the abundance of this material and from the desire to recreate this natural environment. These caboclos, these repertoires of sensibility that I have, that we exalt in samba, in food, at parties, where does this fuel of affection, of territory comes from? What repairs have not been done yet? What are the biggest cultural debts we have in Brazil? Indigenous and black debt are certain, and the constant colonization, the myth of colonization that begins with the fallacy of our "discovery". The remnants of the still existing peoples must be regrouped, rearranged, and revealed in some way, and I think the role of the arts has much to do with it. Not only to repair the damage to the people that existed here before, but also to their cosmologies, to their other worldview narratives that are very evident in the cultural legacy.

EA3 For example, in the arts I have been drawing since I was a child, I began to paint in a self-taught way, I did some programming courses, my own readings on environmental themes are complemented by my experiences within the Amazonian experience, where I also worked as a gold digger for 9 years, so there are many experiences that were only complemented later with the information of the academy. With respect to my interest in environmental issues, this started in 2004, which was one of the first works I did in relation to the environment, which was an urban intervention in a garden, with a cut tree trunk that was painted in white. I painted the shade of the tree from that cut trunk, as a form of reflection over the public measures that cut trees indiscriminately. We created the shadow of that tree, as if its spirit were still there, and a lady passed by and said "you made the tree's soul," and from that interesting feedback we began to make other interventions in this regard. Soon after, I started a master's degree in geography, which discussed the issue of hydropower, so I started to pick up some academic texts and gained a little more awareness of this issue within the Amazonian perspective. Also, that same year, I had interactions with other environmental activists and I bought the idea. So that's where my interest in the environment started.

EA4 I think it is personal, I think I have always been attracted to nature, even as a child, I would always be outside, I would go into nature, I would take bike trips, do my work somewhere in the fields and things like that, you know? Maybe there was an influence through my father, especially, because he likes the outdoors a lot. So I've always been a sort of an environmentalist, I've always loved the environment. It was obvious, somehow, that my work would at some point go into that direction, even though I didn't plan on it, it just happened that way.

EA5 Growing up in New York City, the environment that was my experience was that primarily that of concrete, metal and glass. I had the great fortune of being able to go to summer camps, having some experiences with nature. My parents took me on a few road trips to some national parks, but I think the most important connection as a child to nature was that I lived very close to the Hudson River and there was a section where it was fairly still untouched land, so I had the experience of spending time there, especially as a teenager. I also, though it is not a natural space, spent quite a bit of time in Central Park, and in a sense it became a place where I could retreat from the noise and stress from the city. So I spent a lot of time in Central Park, I still find to this day that when I go to visit NY, at least once during the day I have to find myself at that park.

During the 70s, when I was living in California, I wasn't connected to the outside. I was living in an ashram, practicing yoga, meditation and philosophic lifestyle, and it has continued through most of my life. So I was much more focused on my inner experience and not on the outer world. It wasn't until there was a major fire in the San Bernardino Mountains that was called the Panorama Fire, that I noticed outside. The mountains, very tall mountains, that you could see basically from anywhere outside were in flames, and I was drawn to go closer to the fires and see what was happening, and that experience, and the profound impact that it had on my community, and the loss of property and I believe some lives, had me think about the power of nature, and that nature was a force, more powerful than anything else, and so thinking about my own meditative practice, and sort of focus on my self and this inner world changed, and I became interested in the outer world and the power of that, rather than the power of that inner experience. So I decided to start photographing the landscape. It was really through the act of photographing that I created an intimate relationship to place and with all of the experience around. I was focusing on things that I have not looked at before or thought about. It was through that visual connection that I was developing an intimate relationship with the natural world. That connection continued to grow, and I began hiking and backpacking, and spending more time in the wilderness. It was a huge shift for me, from an urban and suburban experience, but I found that I really wasn't that interested about making work about these wilderness places that I would go, I would photograph those places, but it was really more about my personal connection with those places, and understanding our ecological systems, connecting with wild life, with plants, with all flora and fauna, having an experience of quiet, of space, of sky, and realizing that I was one with this.

EA6 I never thought of that, to be honest, but I believe it comes from my family. When I was little [...] for most of the holidays we would travel with my mother to the countryside to visit relatives, so we always had a direct contact with nature, picking fruits from the trees, tree climbing, flying kites in the field, going to the middle of the forest, so we have always had this relationship with nature since childhood. My family has always had a direct relationship with the land, we always had farms, so I think this is a bit impregnated in me. I believe that this interest also came much from my brother, who left aside the idea of being an engineer and decided to study biology, so I ended up experiencing this trajectory a lot, and he ended up contaminating me a lot with this vision, this ideal of nature, the importance of it, so I think it comes from the family and this experience with my brother.

As previously noticed in the answers about which references and knowledges they use, we will notice again that there is a predominance of intuition on their creative processes. Even though EA1 and EA2 mention a very specific starting point to their creative processes, which is related to the spaces they are going to work with, the next phases are much more fluid and don't follow any

rigorous process. There are no external forces shaping their creativity here, as they mostly feel free to develop their own intuitive ideas.

Table 5. Creative process

- | | |
|-----|---|
| EA1 | <p>My creative process is not linear, but there are some things that are repeated and that structure this way of building this creative process. I always use research, which is a constant search. Every day I dedicate myself to reading, so that's a baggage that I carry. Many of my works are site specific, they are works specifically designed for a proposed place, sometimes by myself and often by curators and institutions that invite me to do an art work. So these places give me a key to create these art works. I always start from a listening of these spaces, a listening trying to understand what that space is at this moment, this year, and a listening of what was this space, what was this environment, what is the story that it carries, what is present there, visible and not visible, that can help to understand what this place is at the moment I propose something to this place. From this listening I will access these internal contents and see what is possible to be mounted there, which I can propose to this place. And this comes in quite different ways, of course I have a repertoire of approaches, a visual repertoire that I access and that makes it visible that it is my work and not someone else's, and I think this comes from the individual repertoire of every artist, that this repertoire is being built with history, with the experience, with the work that you are building. So there's that whole process that's what I always use. The end is very mutant, it is not an end that I have foreseen where to reach, and I can only come to an end when I have a proposal that has a power that can activate that space, a power that can become visible within that space. I really like to structure my ideas from drawings, sometimes very simple sketches, but for me they generate other reasonings. I need to put these reasoning on paper so I can have readings on it. Some works do happen even without having a sketch, a drawing, but most of them have, it will depend on the difficulty of the space problem that is placed.</p> |
| EA2 | <p>I think the relationship with the environment is very fundamental. When I make an exhibition I ask what that space was 100, 200, 400 years ago, which are the ages of many woods that I have. Can you imagine how much history these woods have seen since they were seeds, until they grew, got cut, aged and came here? They've seen a lot of history. Also I try to know about the history of the neighborhood. From the history of these places I try to criticize it, I try to give another reading to it, searching within the elements that I possess the possibility of telling these stories. When they are neutral spaces, I give myself the permission to make a story, to narrate a story based on Brazilian cultural traditions, always trying to use the maximum of local elements.</p> |

EA3 With regard to the technique, I write down some ideas here and there, sometimes they are not simply ideas, they are insights that can come in the form of an image, video, and that is recorded, and every now and then I look at it, I see if there is something interesting, it is a creative act too, because if at any moment nothing feels interesting to you, you go there and find a stimulus, an old idea, an image, a video. These things are like this, creative methods are destined for chaos and the cosmos, now the expository methods, the more concrete methods, the more material, are destined for Cartesianism itself, expository strategies are more rational. For me there is not a single creative process, or there is a single creative process and there are several methods, it can be that too. But sometimes it can start with a photo, an image, an idea, a poem, sometimes the start comes from a critical situation that appears in the media, a social issue, so there is no specific method to begin the creative process. Usually it begins with an idea, and it can come in many forms, and this idea is developing, it needs time to develop, if it develops, and sometimes you pick up things very easily, and other times you have things that take years, then there is no specific methodology in the creative process. For me it is more intuitive, to create, and then comes the 90% of sweating, and intuition is 10% of that, because it finishes with rationalization over that intuition, closing with another aesthetic and communicative intuition as well, so I think this is a sum of instrumentalities that are coming together, there are layers of sediment, and it amalgamates in a certain way that when it is ready, it is ready.

EA4 Sometimes we cannot even vocalize it before it is done, you know? It is not like “oh, now I am going to do this kind of art”, I started doing things with snow because it was fun at first, it kind of develops step by step. Sometimes you do something and you might not even take it seriously. We play with something, and then we notice there is some greater potential in it, and then we drive it further. I think it happens as you go. You have an idea, you do something with that idea, maybe something small, and then maybe communication with others will show what you should do with it. It gets more structured when you have to put things together into a show, right? But when you develop a work, except when it is developed for a specific purpose, it gets structured, but it doesn't allow so much play, you know? It kind of restricts you a little bit in how much you can go beyond that and change things. But if you don't have this specific objective, the process is not very structured, it often just flows, it often comes and takes turns that you didn't expect before, which to me is very important and very exciting, because this makes it more interesting, you know? To me, to work with it, and also, hopefully, to the person who later sees it.

EA5 My creative process I think is constantly changing and evolving, I think it really depends on the subject of the project that I am working on. [...] Photography has been used for me as meditation and a way to comprehend and adapt to my environment, so often I will find myself interested in a specific subject, and what I will do is I will photograph that subject and that subject could be a specific plant, it could be a river, it could be a larger environmental area, it could be a lot of different things, and the act of photographing helps me to have an intimate experience with that, though I can still have that experience with that place without photographing it, the photographing of the place creates a record of that experience, it helps me to interpret it, it also becomes in a sense a visual diary of that experience, and additionally I do readings, I will do research, it could be library research, online research, archival research related to the subject that I am interested in, so my process tends to be both through my personal experience and through research and readings. There could be interviews involved with people who have knowledge about the subject that I am interested in, and it is through the gathering of all of this that eventually I distill all of this experience and knowledge into what the art work will be, and often when I start I have no idea, I am just drawn to a subject, I spend time because I am passionate about it, and I want to learn and grow through that experience, but in terms of what that final artwork will be, if it will end up being a photograph, a photographic project, a series of photographs, if it will be a sculpture, an installation, if that project will be short term or long term, it I will complete it in days, months, years, decades, I have no idea. I allow the experience and the process to unfold for me, when it feels done, it is done. Often I have a vision in a sense, or some idea that develops as I'm working with a certain subject or topic that informs the direction that that artwork will go, as many artists some artworks fail, and some projects or subjects of interest I began and they are not finished, either because I don't have the clarity to make it to the end, it just doesn't seem to be speaking to me, or I don't think that it is successful, it is not meeting my intention, and other times it is very clear that it is working, and I feel that I want to see the project to the end and share this to a broader audience.

EA6 My process is very intuitive, it does not follow a logic or methodology yet, it can be born even from an observation, from a very punctual matter, I do not have a sequence. My work is very open, and I even prefer it to be this way, looser, than trying to always go the same way.

Corroborating Csikszentmihalyi's ideas, all artists emphasize the importance of social interactions in their creative processes. They recognize how their work is influenced by such exchanges, and they cherish it. It shows how the works of art are derived from a collective net of inputs, and how it strengthens creativity. These exchanges seem to influence creativity a lot, but they are not seen as a negative force, this is a force that enriches the creative potentials of environmental and ecological artists.

Table 6. *Social interactions in the creative process*

EA1	Speaking of me, I think I have a rather lonely job, but I really enjoy sharing this creative process. The ideas come from my reasoning, but how this is built, I like to share with other professionals. I accept many opinions, the work can formally change depending on the associations I make. I like to share processes with curators, when they are open to it, and when they have a deeper understanding of my work. It is very rich to split processes with some professionals. With regard to the public, my work often requires me to be more present, and I end up getting too close to the work to see how they deconstruct and are absorbed. I am interested in seeing how this happens, so I am very present in the work I do, and other people also bring approaches and approaches from others, but I like to be close to it, it gives me fuel to do other jobs.
EA2	Social interactions affect me in an essential way, especially the connections I have with the periphery, with the belts of the city, with who built the city. The basic questions I always ask are what it used to be on this terrain, who built it, where does this sand and cement come from, where do these woods come from? And then you end up falling into the working class, who really built that space, so I always end up relating to a lot of sarau, hiphop, street culture, trying to construct poetic plots about this fragility of the social fabric, about the social abyss, about the valuation of this debt, on this late, delayed, postponed repair. The environment is closely related to these native peoples, because everything is based on food, leaf, drum, and the drumbeat of the heart. All the beats we hear in hiphop, samba, rap, rock, everything came from that first primordial play of the drum that imitates the beat of our heart.
EA3	Regarding social interactions, they influence in one way or another. [...] At home I have the partnership of my wife, who is my partner in my projects and I am of her projects, and we have projects in common. Working in a collective is also not easy, because sometimes your idea is overcome and you embark on the canoe of others, but you arrive at the end and often see that their idea paid off, but sometimes not. But it depends on how open you are to accept this kind of process.
EA4	The connection with others does influence my work. For me it is always amazing to see other artists work, like to go and see galleries and art museums. I have always loved to do this. To look at somebody else's work can get you into different directions, and the same can happen in a conversation with another artist, or maybe a curator, so I would say that this can help, but as artists we are also solitary.
EA5	I learn quite a bit working with the other photographers as we share our research and our work. I have colleagues that I have taught with at Cal State San Bernadino that have inspired me through their work, and I have collaborated with some of these colleagues, my son is a theoretical physicist, my sister is a chemistry professor, so two of the people that are very close to me are both scientists and they both work at universities, so I have these people in my life that I am very close with and we share ideas and it certainly impacts my thinking and my creative process. I have a very large social network of artists who work specifically with environmental issues, I have been involved with the ecoart network for many years and we communicate at a daily basis through email, and there are numerous other artists that I am in contact with and also I have curated quite a bit, and this is a wonderful experience for me to interact with other artists who are working on issues of place, on environmental issues. I am constantly interacting with different non-profit environmental groups. I also have the great fortune of working with graduate students and I've had a number of students who make work dealing with environmental issues and that interaction has definitely been spiring, impacting my thinking as well as myself impacting theirs.

EA6 Basically this contact with other people is critical to creating knowledge, expanding horizons, getting out of your box, so I believe this is critical. When I'm in Serrinha thinking about work and meeting my brother, I talk to other people, and they bring other information that goes beyond what I knew, this is very important for the evolution of the work, so I believe that they profoundly help my conquest as environmental artist. Even when you have contact with the Homeless Movement, or you go to the outskirts of a city and leave the center, you see that the relationship of these people to the environment is totally different, so even these social issues end up bringing in another way the environmental issues, they make you think in a new way, so this is very important for the insights, so this exchange is priceless.

As it happens in any other creative pursuits, environmental and ecological artists have many insights but select only a few of them to develop into completion. This selection process is, again, very intuitive and self-centered, meaning that, mostly, there aren't external factors influencing this process in a strong way, although artist EA4 has pointed out that the selections can be done with base in very pragmatic determinations, such as the space where the project is going to take place, the abilities of oneself, or the lack of money to produce some of the ideas. Mostly, though, the artists seem to make the selection prioritizing their own feelings around the ideas, and once an idea is selected, the difficulties in pursuing them will be dealt with in another phase. The potential of ideas are mostly not determined by external factors.

Table 7. Selection of insights to pursue

- | | |
|-----|--|
| EA1 | It is the time that determines. If, over time, these ideas remain, I think there are important things there that need to be taken into account. When in time this is lost or becomes something else, I leave it aside, but it is never a total neglect, because it serves to generate another insight, another idea, in a later moment. |
| EA2 | If the dynamic force is evident, in the sense that it is alive, it begins to expand energy. Does it emanate energy? If the answer is positive I will go after it, if it is emanating much noise or confusion and the intention is not this, I will kill it. |
| EA3 | The factors I use to analyze my own insights depend on my cultural references. I started drawing from an early age, then moved to clay for a while, saw my mother making wood carving, making pictures, so I grew up watching her do it. Then I learned how to play the piano, I had a classic musical training, which I hated. I spent time without contact with art and later I began to fiddle with painting, engraving and sculpture, primarily because of money, and then it started growing, and you perceive the fetish of the idea of artist and art as merchandise, and the newer ones embark on this canoe. So the breaking of this pattern took place from an academic perspective, and from there the new cultural and critical references, studying and teaching art history, I tried to understand my place in the world and my way of thinking. |

EA4 I write a journal with my ideas, and I would say that only one out of ten gets to be produced. But it is a good question, how do I choose which ones are the ones I am going to pursue? Sometimes it is a pragmatic decision, let's say, which one of these ideas fit best the show that I have coming up? For the space, or for the context of the show, or for whom I am showing with, so sometimes these decisions are made by something else, something that is making the decision for me. Or it could be that I make a decision according to my abilities, let's say that a project demands a lot of technical pieces that I cannot produce myself, and I can't afford to pay other people, than I might drop that idea, either adapt that idea or go for a different project altogether. So there are a lot of externalities that make the decision for me, in a way, so I am not always going for my most favorite project.

EA5 I think that that is something in which you just have to trust your own intuition. I think that each of my insights are worth pursuing in that moment that I have the insight, and over time I see if it is evolving and if it is worth continuing to pursue, and I think that comes in time and trusting oneself, kind of a gut feeling, what I feel most passionate about, what I feel most excited about, what is enriching my life and what I feel may have the greatest impact on others through my work. Sometimes I make work because the process of making the work itself will be a growth experience for me. Other times I make work because I feel that I want to share that insight with others, and so sometimes the work is put out into the world for others to experience and sometimes it is part of my own growth experience, and I realize that is not something here for me to share with someone else. I also think having others that you can share your insights with, through conversation, and through whatever social interactions one has with those who are one's support system can also help you decide if an insight is worth pursuing. I think that sometimes I share those insights with my husband, with my son, with my sister, with friends, other artists who deal with environmental issues, and just getting their reaction can often help me decide if there is something to pursue. But most often it comes through my gut feeling that it is something that I need to do.

EA6 I think the name itself already says that, it's an insight. So when you have an idea that you categorize as insight, I think it already has a relevance, I think you already have to go after it, after information, find out if that has any foundation. Usually insights do not have such a deep relationship with existing knowledge. When an insight appears I always write in a notebook, since I understand myself as an artist I have a notebook where I write down my insights and observations of the world, I end up writing to be able to remember or make a connection, a relationship with other thoughts, anyway, I think when it's an insight it already has its importance, so I already write it and I go after it.

When asked about their obstacles and advantages to achieve their objectives as artists, most of them focus on the obstacles that can be divided into obstacles related to the field, such as money and recognition, and obstacles related to environmental issues in general, like the difficult change of paradigms in our society.

Table 8. Obstacles and advantages related to the field

- EA1 Nothing makes work easier. The work of an artist is always very hard, you have to have a lot of willpower, a lot of resistance in a country like Brazil where these issues are not valued, you have to be a warrior. (...) There is a lot of prejudice against artists who work on these themes, but nowadays this is diluting, we have already been able to break many barriers on this, but of course it depends on who is on the other side, the social organization of the arts, which has people who are more open and more closed. So you have to fight for your own work, and maybe working on environmental issues creates more impediment factors, but on the other hand, in other situations, this is not a problem. All these mentioned difficulties have to do with the artists who live in Brazil. Prejudice comes from society, and the people who form the field are also part of that society. The population in general has not yet understood that we live in a finite sphere and that we must preserve it and consequently to us. As a matter of general understanding, prejudice still exists. These people have an acting that affects this slice that works with the arts, but they are inserted within that whole society.
- EA2 The problem I have is financial, is to pay the rent. The obstacle is how to sell, how to insert myself into a medium of production that is not exactly a small hall of collectors, and that these collectors are more expansive people, who think of spreading that culture out there rather than focusing on their private, closed collections .
- EA3 The difficulties for this to occur are of all order, from everyday situations, financial issues and issues that can hinder the way, but in general the difficulties are there to overcome. What powers the art is to be in the world, to be outraged, or to have some question to be resolved. That kind of thing is what stimulates me, is not having the right answer, is going behind a response, or elaborate something aesthetically that gives a different result or an attractive result, especially in terms of public feedback, then the point is to know how to communicate, because not always a work of art communicates, then to know how to communicate better is interesting. What stops me are everyday situations, sometimes financial situations, for not having money to put in all projects, or not being able to outsource certain processes of the work of art, then we have to do it alone or not to do it at all. The most critical situation is this, it is often not to have the money to do something very interesting. That's the difference of the great names, because they have the money to have it done, to hire a team, while we who are small do not have that money. Financial condition is the thing that stops the most.
- EA4 There are lots of obstacles, ultimately I am only one small person in a big world, and I don't have an infinite amount of means in many ways, I don't have an infinite amount of time, I have very little money that I could spend on promoting myself or my projects to others, so these are big obstacles. If I had more of that, than would be good.

Table 9. Obstacles related to the domain

EA5	The advantage is that I am aware of who I am, and what is important to me, and what I believe in, and I have a lot o passion, and I have a lot of energy, and that continues, so there is many advantages of being an artist, and being an environmental artist just means that the subject of my work is something that is constantly evolving and revealing things to me, though i think that is true probably for many artists that work with other subject matters, and advantages that maybe my work will impact individual people's actions, it will change their way of thinking, it will create changes in policy, those are a lot of advantages. Obstacles, ah there is so many obstacles in terms of dealing with environmental issues, being an artist, but I don't like the word obstacles, I like the word challenge, and I think it is just a challenge to find solutions, and to move forward, and to do important work.
EA6	I think there is nothing easy, everything requires an effort, but the greatest difficulties are the existence of large corporations, capitalism that always aims at maximum profit, then, hardly when you come with a subject that is not inside of that culture, of what they think, they end up discarding and throwing away. The government itself does not think that the environment is important, so there are strong resistances from all sides.

Still under the perspective of personal abilities, the respondents answered questions about how they deal with the field, and how they manage to convince the gatekeepers about the value of their work. All the artists have shown difficulties with this matters, and none of them seems to appreciate some of the requirements of the field, like the explicit demand of a tight relationship among artists, curators and art collectors in order to open space for the artists to show their work and sell their art. The characteristics of the field end up pushing some artists out, which is the case of EA3, who does not accept or cooperate with such structures. Others prefer to focus in other perspectives of the art, other values that go beyond the money and recognition.

Table 10. Personal abilities to deal with field requirements

EA1	This is very subjective, I do not have such a presence in this regard. I think time, yes, makes work more visible to people, repetition of content, and I think it depends more on how these structures relate and how they are opening up to new possibilities, and how the existence of these themes becomes more present, and people end up becoming more open to these themes. Of course, there is a need to be present in the right social circles, but this approach exists when one thinks of the visual arts from the economic point of view. I try to think of the fine arts without this economic bias, but rather with the bias of the importance of a work of art in 2017. The need for the right contacts exists all the time, the artists' structure and the arts market is built on top of that, but that's just a part. Perhaps this is the most visible segment, because economics, commerce, advertising, marketing are all characteristics of this contemporary life, but there are other layers that are not so visible, but which, in my opinion, are more important. As I think the world has far more importance than economic issues.
-----	---

EA2 It is a sequence of stumbles, of slaps in the face, very equivocal, a game of mirrors. There is still a war of colonialist intents, there is an intention among the curators, albeit veiled, to serve a court. The councils of cultural organizations are still made up of members of century-old families, by people very established in society, by collectors, and they push the artists to work within the norms that are accepted internationally. To work with large art institutions you have to be a diplomat with the curators. [...] We know that, to please, you have to do a lot of lobbying, a lot of talk, a lot of dinners, a lot of social. It's interesting to realize that when you go into a political rally and you curse the oppressors, you're actually cursing your own collector, and it's very difficult to say there is no confrontation. There is a confrontation, yes, but the suffocation is so great that you take risks, living with less, not having as much social articulation, but being able to do what you want.

EA3 The work is. We ourselves are our own curators, we are our own shamans, why do we need curatorship? Why call a curator? Curatorship needs a voice of judgment, and I think we have people here with enough reflection and reading to make their own value judgments.

EA4 I think a lot of us, including me, are not very good marketing people. Unfortunately, a lot of artists do not have a special talent in this. Some do, there are exceptions to everything. I know artists that I don't think are that great, but they somehow get a lot of shows, they sell a lot of their work. A lot of it is who you know, how you approach these people, how much you talk to these people in events, showing up for certain events and being nice to curators and gallerists, but in a non-intrusive way. There is a lot of that in the art world, and there is a lot of artists who are good at doing this, but I hate this, I hate this, and I am not good at it, at all. So this is very tricky in the art world, and sometimes it is frustrating and annoying, the marketing part and how you approach who, you know? But there are other opportunities that are more objective, like calls for projects in galleries, I feel that these open calls are much more promising for those who are not good at marketing. This is how I have shown a lot more of my projects beyond the surroundings of where I live, this is how I have shown a lot more internationally, because it is easier for me to apply to these calls, and it is usually a committee that objectively looks at the works of art, and most of the work they get is from people from outside, so they don't know them, right? So they can be more objective. For me this also seems to be a more honest way, actually, to show my work because it is really about the quality of the work and not about my personality and try to talk people into something and try to be nice to them, you know? In some galleries you have to be introduced by somebody, like a big artist, or a professor that is very close to someone has to recommend you, you know? And I don't like this.

EA5 It's been a very long process developing a professional network. I feel I have a fairly successful network here in the West, I don't think I have been successful developing that network in the East. Here in California I have been included in several successful exhibitions, major books, and if you look at my resumé you will see I have been in over a 100 exhibitions, but that is because it has been a lifelong career, I am 64 years old, I have been working as an artists since my twenties, I have been showing since I am a student. I think that the business of art requires a lot of time and perseverance. I teach the professional class to MFA students, so I am well aware of all the things that one needs to do to develop that network. I think that I do most of it pretty well in terms of maintaining a visible presence through online on my website, online social networking, going out to art openings, staying communicating with curators and critics through email communications, keeping them aware of when I am exhibiting, when I am speaking, and I think that is probably the most important. I do have a gallery that represents me, but I feel like they could do a much better job in terms of assisting me with this aspect because certainly a gallery can really help one with their career. I think the value of ones work is seen over time, it is also related to how timely the work is that they are doing, I don't necessarily think that it is our job to convince others, I think that you do the work, you get the work out there, you make the work visible, and hopefully the work will speak for itself. I think that in the last few years there is a much stronger support system for social practice, while in the past that didn't exist, I think that everyone understanding and knowledge of the seriousness of climate change and also the politics here in the US with the current president, with more anti-climate change and anti-environmental stands that Trump has, there is more of an interest in work that is more environmentally focused, that is more political, in reaction to our political system which isn't really supporting environmental protection. I've never been one to really try to market my work financially, I have been fortunate to have a tenured teaching position that has financially supported me and my career, so therefore my work is not necessarily sold very much, I think if I needed the money to survive through the selling of my work I would probably take a different approach to marketing of the work, I am more interested in just getting the work out there and obviously I would like the work to be out there more, I think there is a number of curators that aren't aware of my work that I would like to be aware of my work, but it is not necessarily that easy to reach everyone. I don't send communication through email about exhibitions but it is hard to know if they are actually looking at that information and following through in any way. I do know that my website does get quite a lot of traffic, and I'm trying to always direct people to my website, so maybe people are seeing the work that way, obviously exhibitions are short lived, 4 to 8 weeks and they are down, and you don't always know who sees the work, sometimes the work is reviewed and I hope that those reviews are seen by a number of people.

EA6 Basically my abilities with this matter are zero, I think I believe more in a relationship of identification than of convincing, I think that when I develop a work of this nature, there is a previous exchange of ideas, even because it starts from an insight that I give back to the people around me, who have a relationship with this insight, and from that conversation I have with these people I develop the work, so I believe it is more of an identification than a convincing relationship. I think it's more of a relationship of return versus value, I think there is a two-way street here, I think that both the artist and the field depend on each other, the artist brings the inputs, the references, the reflections, as well as the field also brings them, but I think it is a symbiosis relationship, a mutualism, one depends on the other, one helps the other, I think in this case there is this relationship between the value of work and how much this work gives back to that social organization, either as reflection or as knowledge.

Third classification: Field

The “field” is the final classification and, as seen before, it has the task of selecting promising variations and to incorporate them into the domain. As we are talking about arts here, this field is composed by those that affect its structure, such as art teachers, art historians, art critics, collectors, gallery owners, museum curators, and the peer group of artists. Some of these people are more influential in incorporation creativity into the domain, so those who act from this privileged position can be understood as gatekeepers (Csikszentmihalyi 1988).

But the field of environmental and ecological arts may not be autonomous, meaning that external opinions such as the ones coming from the public, are also relevant when the field establishes what is going to be taken into the domain. Another important aspect to be understood about such field is if it is open or closed to creativity (Csikszentmihalyi 1988).

Some of the answers seen before have already pointed out that access to resources may be an issue in this field, and resources can be important to attract creative people, even though they may enjoy working in domains for its own sake. The fact that environmental and ecological arts are dealing with one of the most important matters of our existence can also determine how attractive it is to new people who are willing to innovate, potentially generating more creative breakthroughs (Csikszentmihalyi 1998).

We will see that the field is the classification that holds more negative influences in relation to the environmental and ecological arts, and it is important to understand what are the elements that contribute or prevent artists to develop their creative endeavors, such as if there are social roles, personal types or relationships that can be determinant in this matter.

The respondents were asked how they feel the field approaches the environmental arts, and we can see two segments, one focusing on market values and the other focusing on the inherent quality of the art work.

Table 11. Field's approach to environmental art

EA1	I do not know, I'm not sure that there is a specific demand or expectation regarding the environmental arts. I think there are some individuals who are more sensitive to these issues, I think there are some characters who have a greater sympathy with these subjects, but I cannot see unique approaches to this type of art. As I said before, the commercial artist needs the endorsement of the gallery, of the critics, but there are other layers that are not determined by this. [...] And even the history of art is being built, and many artists are only recognized afterwards, thinking of that layer that determines what belongs or does not belong to the arts, but even so these criteria change with time. These agents are determinants for a segment, but that's all always mutant. There are artists who are oblivious to all this and who build a work of tremendous importance.
-----	--

EA2 The first thing is to wash the conscience, the second thing is the image, because institutions need to clean their image and are increasingly investing in symbols and icons of sustainability. There is a tendency there because the environment is very explicit, even more if it is colorful, ethnic, there is a funky side that is attractive, and fashion, and the cultural industry exploits this a lot. There is a niche in the market for such topics, I have gallery owners and collectors who ask for forest frames, but the portrait of the indigenous suffering they do not want because it is not so commercial. There is a demand to produce these green, present and self-critical intelligence trophies that would be an environmental work of art. [...] It is interesting to note that there is this will to return to nature, but with obstacles, what kind of nature do we want to be? The demand that exists today is for an art that does not spit in the face of the public, because the public knows the problems of the planet, but wants the beautiful and exotic photo of an African who is very sexy, beautiful, is strong, is stylish, but that does not relate to the public, which does not provoke it. But we also cannot generalize, but people really tend not to go deeper, and follow what a critic says. Decisions are taken around the dining table, with a wine of 50,000 reais and a buffet of 100,000 reais for 3 people, and they discuss who bought who, and which artist will exhibit in the museums because they are the patrons of museums, and define the schedules of several years, according to their particular collections. This spills in the artistic production, because the artists are not blind and many do not have enough money, with 97% of them being broke. The art sector is very likely to be elitist. The exhaustion of contemporary art comes from that, because it is based both on processes consecrated by other artists or other authors, very safe and individual observations, the pursuit of such an artist genius x, which we end up never contemplating, so it is very pretentious and deviates people of any kind of assimilation. I saw a lot of hypocrisy in that sense, in terms of art and repertoire, so I had to give up studying art, because that's not what I want, so I'm going after another kind of education, so I started a master's degree in holistic studies, consciousness.

EA4 In the arts there has always been a clear division between commercial galleries, that always run a very safe content, because they need to sell, because that is what they do. A lot of commercial galleries do not take risks, they will not show an environmental artist who is maybe young or who hasn't sold a lot of works, because they can't risk that. But then there are non-profit spaces that get their money not so much through art sales, but also through funding, so they can risk more, they can do more things that they feel are more interesting and important, and that need to be shown to the public, and not necessarily renowned artists who sell a lot. So there is this division in the art world.

EA5 I think that most institutions that represent the evaluation process, specifically looking at museums, both private collections that lead to museums, or public museums, looking at government institutions, I think that in general the criteria that is used for the evaluation of art that deals with environmental issues, environmental art or ecoart or all of that, is basically the same, and is primarily fairly subjective, in terms of the evaluation of the quality of the work, the ideas, certainly issues about relevance to our time are important, so therefore environmental art would be something that would be considered as being extremely timely, especially dealing with issues of climate change, but I think both objective and subjective demands and filters would be the same to most institutions when it comes to their collections, now in terms of exhibition work, galleries, museums, nonprofit spaces, pop-up spaces, alternative spaces, I think the timeliness of the work, the significance of the issues would make a difference especially right now, in terms of showing the work, giving the work exposure, exposing the work to new audiences, so I think there is a difference when it comes to art that deals with environmental issues. Now of course there are specialized institutions, that focuses specifically on art and practices that relate to the environment, and obviously in that case, the curators and art historians, and everyone engaged in a specific

organization or institution like that would have a focus on preserving creations for the future that is related to a single topic.

EA6 The field faces environmental art without prejudice, I think that there has always been a little relationship between the field and environmental arts, since the Dutch landscape artists. I believe that there is no separation between environmental art and other arts. The question of environmental arts, when you take vegetation to a museum, for example, you require the museum to be careful with the work with watering, light, specific care, so sometimes the museum itself prefers a job that does not require maintenance than an environmental art work that requires someone to be responsible for the care of that work. But the importance of environmental art is as relevant as any other, if not more so today. Nowadays, I think it has much more relevance than any other art, even to bring the living, to bring up issues that sometimes people are not even aware of.

The first stresses how the artists are entangled in a market that defines a very narrow group of gatekeepers, in this case gallery owners, art critics and art collectors. These gatekeepers end up influencing what some artists produce, as there is a preference for art that talks about the environment, but in a pleasant and fashionable way, in a way that is safe and well received by most. This clearly indicates the presence of strong powers against creativity.

The next segment believes that environmental and ecological art is generally evaluated by its quality, and also for the fact that this kind of art is dealing with timely issues, being it a very strong subject nowadays. Both segments are not necessarily in disagreement, as the timeliness of a subject does not negate a possible preference for works of art that talk about the environment but that don't make the public uncomfortable. At the same time, an unprovocative piece of art does not necessarily lack in quality, it depends of subjective evaluation systems that define what has quality and what hasn't.

In both cases, though, it is possible to notice forces pushing and pulling creativity in the environmental and ecological arts. These forces are sometimes unclear, subjective, very related to the changing contexts of each institution, exhibition, and circle of gatekeepers, making it difficult for artists to understand what is being demanded and what is not, enabling them to either play with these informations or negate them in its full, something that has been done by one of the interviewees in its entirety, and in smaller doses by most of the others.

The artists also shared their opinions on how the field recognizes an art work as creative and valuable, complementing some of the ideas already present on the answers seen above.

Table 12. Field's recognition of creativity and value

EA1	I think most of this field is more interested in finding things that are already known, things that are already, in a way, understood, already processed. (...) Many institutions are interested in repeating what has already been consolidated. It is important for an artist to become creative in these places and create tension. Institutions are not prepared to receive many kinds of work, but this is being built between artist and institution. It's hard work.
EA2	The field mostly recognizes artists using almost obvious elements, very colorful, with a lot of ornament, without great critical visions of something. Many gallery owners already ask for the production of works with specific dimensions because they already know who is the customer they have in mind and which wall the client is going to put the work on, so it has to embellish the house and go with the preferences of the customer. In order to break free of this market, environmental art began to free itself from this context, and began to explore the open, natural spaces.
EA3	Here we have the systems question. The moment the work becomes recognized by a particular system, it becomes valued, this work starts to be used as an asset, as something to be speculated, so often the artists have their work valued, but they are forced to have a market view that is co-opted by the logic of the financial market. The work by itself is already valued by the artist, if there is no desire of valuing it specifically for the market. The work is already valued by a matter of research and rigor, and also by recognition of the peers, and the valorization that occurs in this sense is in the application that is given to this work within a certain community, which is the reflection that this will lead to certain social situations, then valuing this type of situation, in a way even more than its mercantilization, its trade, then sometimes can be in the field of ideas that this value will occur, within these more underground circles.
EA4	One of the things is personal, it is about taste. The other thing is who the person is and who needs to make money out of this, so this will be a very important factor for them. Does this work sell? If they are more on the non-profit sector, they can take more risks and got for something that is more original, and also some galleries and non-profits as well have certain agendas, they wanna show people who are kind of at the margin of the art world, who are under-represented, not because their work is bad, but because they don't fit into the realm of the accepted trendy art of the time.

EA5 Im gonna use two examples of innovative and creative approaches, and them being seen as valued. One of them is Kim Stringfellow's practice, which incorporates photography, video, sound narrative, web based work, and collaboration with other artists and writers, generating a type of historical journalism and the recognition that she received for the type of work that she does, as a Guggenheim fellow. Another example would be Andrea Zittel who also is a Guggenheim fellow, and her work being incredibly creative, innovative, and transcending the traditional way we think about art making. So both of these artists do this, and they both have been recognized for this work, that straddles many different areas, certainly Andrea Zittel's work is looked at as being more sculpture based, but a lot of her work is based in function, and based in living in harmony with nature, so both of these practices have received recognition in the field and therefore been seen to be valuable, although they don't fit in any preconceived ideas and genres, so I think that these two artists, again, both of them being highly recognized and being women, which I think is really important, since there is still a climate of giving more exhibitions and more acquisitions to male artists. I think that both of these artists who also teach, inspire many to be creative, and to try and explore many new areas and develop new areas and disciplines within art, so it's definitely affecting creativity when you have innovative artists like these two and many other artists who are dealing with environmental art receive recognition. I can also think of Michael Lundgren, he just was awarded a Guggenheim fellowship and he is a photo based artists doing a quite experimental work, coming from more traditional perspective of photography, still working with film, and making work that is very much about the experience of place.

EA6 My way of making art, as I do not depend on this financial return that comes from the circuit, the mainstream, the official marketing circuit of art, I do not have to worry about what people are going to think or how the market will react. I am very intuitive in my creations, creativity always flows, has no obstacles because the curator has said something, or because of the market, or because there is no financial return. I do not think it is up to me as an artist to think about how the field recognizes or fails to recognize a job, I think it is up to me to do and let them find what they prefer.

Again, most of the respondents have shown that the field has a preference for pasteurized ideas, creations that are easily accepted by most, that fulfill the needs of market. Intuition and creativity comes back when the artist frees himself or herself from the necessity of making money out of it, or when the artist seeks to use grants provided by institutions that do not depend on the art market.

Again, when asked about the autonomy of the market, the artists point out that there is no autonomy if one is inserted in the art market, while some autonomy can be gained once the artist disconnect his or herself from such structures. The public opinion is also important, having effects on the field itself, as it forces gatekeepers to open space for art works based in popular subjects, and it also drives collector's desires up, therefore generating more market value for art works that deal with popular subjects.

Table 13. *Autonomy of the field*

EA1	Economic forces greatly influence the field. Public opinion also influences. As environmental issues become more present in society, this field has to become more sensitive to this. The public and society, if they are dealing with this, will cause changes in the field.
EA3	These systems are autonomous within their own limitations, the field itself is an external force, the moment you start working on the issue of trading a commodity, you are already inside an external process and at the same time internal because the market does not receive movement except through the commodity, except in the more underground circles, in which the commodity no longer has that role, but the field offers a judgment of value that comes from those who understand themselves as specialists, the artists enter into a labeling of environmental art, and may suffer a valorization or a devaluation, but not by the work itself, but by the matter of the fetish of the commodity itself.
EA5	I think it really depends on the artist in terms of being autonomous. Within the field I think it has to do if they are making work that is meant to be marketed within the gallery world or if they are making work that is only going to be out in the public sphere, either in the public art, or if it has intervention with a specific site. There are artists who do eco-based work that mitigate a situation, an environmental situation and positively impact it, so one example would be someone like Betsy Damon and her project in China, so in terms of being autonomous, if you are working with a gallery and the market it is hard to be totally autonomous. If you are doing public art, working within the public sphere, it is difficult to be totally autonomous, though there are artists who certainly can have a practice that is more autonomous, that is more self-supported and non-impacted in the same way by public opinion or other forces.
EA6	The value of a work depends on how many brands that work collects. For example, if the work was done by a great artist it already has a brand, if a great collector bought a work, it gets another brand, if the piece participated in a major exhibition, it gets another brand if the work was passed to a second collector it wins another brand, if it went through a large gallery she wins another brand. The more it is passed on and participates in exhibitions and institutions, it adds value to the work. The artist is the last person to have influence over the value of the work; in fact, it is the one who acts the least in this valorization, so there is always the figure of the marchand, the collector, the gallery owner, the curator, the public. The return of the public is also important because it helps to arouse the interest of a collector in acquiring such a work or even the interest of the dealer to market that work to a collector, generating a valuation loop. For example, in art fairs, the work begins in a gallery, but during the fair another gallery buys this work, and the work goes through several galleries and at the end of the fair the work returns to the first gallery, where it began, and at the time of this return, the work returns with a much greater added value, due to the brands and institutions, of the speculation of art.

Continuing to reinforce the ideas that have been previously presented, when the artists were asked how was the access to resources in the field, they answered by saying that money is generally a big problem, that it is hard to be recognized inside the field, that artists should look for funding outside of the classic sources of the field, but that non of these issues limit their work. Environmental and ecological art is a labor of love, it is based on urgency and also on an inner

desire to put out there the best art work one can generate. These are the priorities, and money and fame are looked at as possible consequences.

Table 14. Access to resources in the field

EA1	There are resources for these practices, but they are restricted resources. Of course, this is already better than 20 years ago, but in a country like Brazil this is still very restricted. It is hard not to have money, but these are choices that an artist makes, where his work will have higher power or truer characteristics. So, of course, whoever builds objects, they are much easier to market, and this reverts to monetary resources, and whoever chooses other paths has to find other possibilities to make their work viable. I know many artists who are banking their own works, who work in other spheres, have parallel works, and use these resources to finance their own projects.
EA2	If you pick an established and recognized environmental artist like Frans Krajcberg, he had a lot of hard times in life, he's a Jew, who ran away from nazism, but Marc Chagall paid a ticket for him to come to Rio de Janeiro in the 1940s and he became one of the great Brazilian artists, with expensive works. He has a big confrontation with space, his farm in Bahia has been robbed 500 times, he has a very strong statement, his work is very recognized and he has enough money, but he is still very threatened all the time. At the age of 90 he is vulnerable, yet. There, on a personal level, in my personal dimension of action, I have managed to survive thanks to projects that I do with SESC, which is our great national patron of the arts, some private foundations invite for residencies, calls are opened here and there. Although there is a great spotlight on the arts market, somehow you see that the market, in general, not only in the arts, it becomes a standard of conduct for societies, but few elected live from it, it is a lot of spotlight for just a few people, and the rest stays with nothing. But if your work has some magnetism and foundation it is going to have an acceptance and things start to change, but there is not a lot of abundance. For very few you see an excess of resources, these are few elected, it depends on personal relations more than the force of the work itself. There are many wonderful artists who will never be recognized.
EA3	I am not interested in the matters of fame or money, if they come I hope they are a recognition of a job that is well done, that they will be an automatic issue, but they are not something to be sought and desired, not as a first projection, but as a consequence. The important thing is to stay alive, to continue to instigate, question, provoke estrangement, and leave for the next generations seeds of what our questions were, what was to be alive in a certain period and to act according to your conscience or your ideals, I think this is the most interesting thing for us in terms of art, is to continue producing and marking our symbolic territory in this world made of visual artifacts.
EA4	I think the lack of money definitely could influence artists, however, most artists that I know are not driven by money, so a lot of us do our work because we want to do it, because we feel it is important. There are exceptions to this, definitely, there are artists who are very savvy in terms of marketing and who will really look where is the market, but I would say that this is the minority of artists. I would say that the majority of us do what we think we need to do, and what we feel is right to do.

EA5 I have received several grants in partnership with the Water Resources Institute to do my work, which is unique in that typically those types of grants go to scientists and there have been grants that have come through that have supported my artistic practice. I have been fortunate to gain funding through grant writing to support my work, having that financial support as well as having those deadlines, as well as having to complete projects to fulfill grants certainly helps with accomplishments in the field. As I mentioned, funding coming from such things as the Guggenheim Foundation has been supporting several artists that I am aware of, that work in this real. I think that there are different types of grants out there that artists can pursue, certainly, if their work is not something that is easily marketable, it is more difficult for them to make work to sell to make funds that can support their practice, I think that there are many artists that work in environmental/ecological arts that teach for a living like myself, that seems to be fairly common in the field. I also mentioned in another question that I have been able to get grants through my work with the Water Resources Institute, some of that money has come from environmental protection agencies, it has come from other funding sources that typically would fund scientific research, but because I am working in collaboration with professors who teach in sciences and do research in sciences I have access to funding and support, so I think in many cases artists working in environmental and ecological arts might be finding funding outside arts funding to support their work. I think that there is more and more public recognition for artists working in our field, I know that there is several awards out there that is specifically designed for artists dealing with environmental issues, annual awards. I see calls for nominations on a regular basis for such, I think that there is certainly more and more publishers who are publishing books that deal with our field and I think that the curators who are developing there projects are finding support either through museums or university practices, or sometimes some commercial publishers. In terms of how this affects how artists see these arts, I think these artists who participate in environmental and ecological arts do this work because that is where their heart is, because that is what they believe is most important in terms of their own practice, I think we do whatever we need to do to gain resources to do the work and it is not something that impacts us not doing the work, if we find that there is not much support as maybe for another type of art. I think that in general, in the USA, here isn't the type of support for artists that you see in european countries or you see in Canada, so in US so much of what artists do is self-funded.

EA6 The field is very restricted, you can hardly get into the field without having a direct relationship with someone, it is very closed. If you want to open a gallery, if you do not have a direct relationship with the collectors, with the people who buy, or with a marchand, or with museums, the gallery will not work. So it's a very closed circle. There are very clear procedures for you to enter this circle, but the artist who wants to make money with art, if he dedicates himself effectively and is honest, I think he can get a financial return, I think he can live of the arts. Of course the work has to be good and has to have an acceptance from the public.

Because of the qualities of this domain, the field is being able to attract bright people. Environmental issues are gaining momentum, are getting more popular, and universities are developing more specialized courses around the environmental and ecological arts. People who are interested in these subjects are, supposedly, also more open to new ideas and more willing to bring such messages further. These are good news, and it is certainly a merit of how attractive the domain is, with the field maintaining its structural issues.

Table 15. *The field and bright people*

EA1	Yes, the field succeeds in attracting bright people. Anyone who is sensitized by this type of work already has a more open mind, has a more sensitive approach to a work of art. These brilliant people are not only those who work in the field of the environmental arts, but also those of the general public. I think there are a lot of bright people out there who are touched by it and who can reverberate it in their own places, can echo that work on other fronts, in other media and environments.
EA2	It is attracting!
EA4	Now it is, it is very trendy right now, but it was not when I was in art school. When I was in art school we new about land art, but it wasn't about environmental art, it was about land art, it was about the majesty of this big work in the landscape, we did not question this in an environmental context. This is a very new thing, and new programs in different art schools now have environmental art, which is very new, but it isn't broader than already is because of financial restrictions. Many art institutions want to establish an environmental arts program but actually can't because there is not enough money. And now, with art funding diminishing, artists just work on that on their own. But it is very trendy now, and art is going with this trend. There was a time when art was for the artists and people didn't know about it, and a lot of people didn't even go to museums because they felt like they didn't understand it, such as in the 90s and 2000s. It was kind of like science, they didn't get it! It was very conceptual and it didn't communicate enough to people, it was very abstract in a sense that nobody knew what it was about. Now it is completely different, people yarn for it, you know? They want it, because it speaks out what they think, what they feel.

EA5 Yes, of course. I think that there are many brilliant artists who are engaging in an art practice that focus on environmental and ecological issues. I think there are more university programs that are providing faculty in this area of specialization, encouraging graduate studies in this area, so there is certainly within the art academy support to attract young artists, emerging artists in this area. I think that in terms of, there are many artists who are interested in environmental issues, but don't necessarily do the research to provide work that is as knowledge-based as it could be, information based as it could be, there are certainly talented artists doing work about the environment but it maybe more of a picturesque or pictorial reference rather than coming from hard research, and that doesn't mean that they are not bright, they are very talented and making beautiful and seductive work, but maybe not quite the same as art that is coming from a stronger research foundation. I think in general there are so many artists, especially here in the US where there are so many graduate programs, but in the last few years we have seen enrollments suffer because there is not as much opportunity for artists, there is not as many faculty jobs for artists. So no matter what field or genre or area that they work in as artists, it is so expensive at this point for them to study, and they end up with this outrageous loans, so it has certainly become an issue. Being able to just financially sustain one's career as an artist, no matter what area they work here in US has certainly become more of a challenge for emerging artists. I personally have met quite a number of recent graduates from MFA programs in the US who are committed to a practice in environmental and ecological art, and I am inspired by their energy and their ideas, their creativity, their innovation, and also their commitment to pursue their practice though it is financially challenging for them. I think in general art practice that is based in research and in this case environmental science is going to attract a certain type of person who is bright and wants to engage in such a practice that in many cases is open to collaboration and doing research that is in a number of fields, obviously beyond research in art. I also think that the state of the planet, what is happening with climate change, all the issues at hand, and the critical need to find solutions is the perfect opportunity for artists to engage in such a practice, and certainly we need intelligent, creative minds to become part of the field. I think as the challenges globally related to climate change become more evident and more part of our everyday experience, we will see more and more artists become part of the field of environmental and ecological art.

EA6 Of course the field has bright people, in art you have to give your blood, 100%. The exhibitions are also recognized by the amount of public they have, so if the work is not so good but the exhibition had a large audience, it becomes incredible. I think to have this efficiency, the market seeks brilliant people, seeks people who are good at talking, writing, or good at business and sales. Of course there are bright people in the field. But sometimes what you win can not pay for the bill.

RESULTS AND DISCUSSION

In this research, an exploration of forces shaping creativity in environmental and ecological arts was conducted, following the systemic approach to creativity designed by Csikszentmihalyi and, therefore, delineating this research around three distinct spheres: domain, person, and field.

The results have shown that the domain does not restrict creativity in any way, on the contrary, it enhances the creative potential in artists. By focusing on intuition, popular culture and personal experiences, artists do not feel tied by the kind of content they are working with. Although there is a personal desire to have more scientific references about environmental issues, in general, such “hard” informations do not become an essential part of the art works. Maybe, with a closer connection between artists and scientists, a fruitful exchange would enable the scientists to better understand their community as well as how to communicate with them, while artists would maybe feel more compelled to explore the scientific realm in their art works in a deeper way.

The domain is also responsible for the incredible devotion that artists have for the environmental subject. All the challenges that a career as an artist presents to them are overcome by a very strong motivation to bring important reflections about nature to the public. With environmental issues gaining momentum and attention, plus the magnetism of this domain, an important flux of bright people around this field is almost guaranteed.

The person sphere has shown that the artists have developed personal connections to nature during their childhood, even though some of them needed stronger experiences around this subject as adults in order to direct their attention to it. Their creative processes are very fluid, mostly following the intuition, but sometimes pairing it with a small set of parameters, namely the space where the art work will be done.

There is a lot of freedom in the personal sphere, and a strong recognition of how social interactions deeply collaborate with their work as creatives. This further indicates that a systemic approach to creativity is a necessity, and that artists are well equipped to understand their communities and how to communicate with them.

But the true obstacles of this profession start to appear here, and they are related to the personal abilities to manage what needs to be done in order for the field to recognize them. There is a huge amount of pressure related to the social behavior of artists, and they all feel they do not deliver what is needed. This is where they feel they fall short, and this could be an important determinant of creativity.

We can see clearly that the field is the most important source of negative influences to environmental and ecological artists, mostly due to its structure that is based on very few and very rich people who give the cards of the game. There are not a lot of mechanisms guaranteeing that an artist's recognition is based on meritocracy. On the contrary, this is a market that is largely unregulated and highly dependent on subjective preferences of a very small number of gatekeepers.

As seen above, artists understand this is an issue and they try to bypass it by finding other ways of making a living as an artist without depending on the market of the arts, choosing non-profit organizations and funding from institutions that do not depend on the structures of the arts market. Some, on the other hand, prefer to just walk away from the field to try and operate as independently as possible, as they believe that the message of the arts is much more important than the market around it.

But when one thinks about the expertise that artists carry around, about their abilities to communicate and provoke deeper thoughts about the environment, about their passion for this matter and their close ties to their community, it seems odd to realize that they have only a handful of options to guarantee necessary resources and deserved recognition. What artists bring to the table could definitely be used in public policies, education, health and well-being, science, and many other fields. Speaking strictly about the science sphere, there is a lot to be gained with stronger partnerships between these two completely different yet complementary worlds. The opening of the doors of the academy to the arts would enable growth in both ends, and would definitely guarantee another source of means for the artists to continue their journey of touching people's hearts and bringing their attention to environmental issues.

It is important to notice that the interviewees were all from largely capitalist, western societies, with all artists being part of great urban center networks and fields. Another important remark is that only very experienced artists were interviewed, making their testimonials very knowledgeable and valuable for this present research, but something that naturally excluded younger representatives with newer perspectives. With current technologies like social media, crowdfunding platforms, and new methods that allow the public to support the work of artists they admire, it is highly possible that the structure of the art field will change, and ecological and environmental artists might not be so dependent on the opinion and funding of such few gatekeepers. Interviewing younger artists might point to this direction already.

This research was a first effort to map the forces that influence creativity in environmental and ecological arts. With social-ecological issues getting worse day-by-day, it is imperative to lift the roadblocks that enable creative thinking around these subjects, and this present research was

able to pinpoint some of the negative forces that need to be overcome. More research around this perspective is still in need, and a deeper understanding of systemic creativity is also in order, more so if such understanding would help us to reduce the environmental problems we face today.

APPENDIX

Questionnaire

Domains

- Kinds of knowledge and cultural references you use in your work
- How do you think your work generates changes on how we think, feel, and act?

Person

- How did you get interested in working with environmental issues?
- Explain to me your creative process
- How do your social interactions with mentors, colleagues, and family affect your creative process and your accomplishments as an environmental artist?
- How do you evaluate your own insights and how do you know which ones are worth pursuing?
- How is your ability to show the value of your work to the field?
- What do you see as your main obstacles and advantages in relation to your profession?

Field

- How does the field approach environmental and ecological art?
- How is the process or dynamic of the field to recognize something as creative and valuable?
- How autonomous is the field? Does public opinion and other forces play a role?
- How is the access to resources (money and recognition) in the field?
- Is this field being able to attract a big number of bright people?

Interviewee Information

	Nationality	Age	Gender	Years as Environmental Artist
AE1	USA	90	Female	40+
EA2	USA	85	Male	40+
AE3	Germany	46	Female	20
EA4	USA	64	Female	42
AE5	Brazil	55	Male	30
EA6	Brazil	47	Male	22

REFERENCES

- Amabile, Teresa M. 1996. *Creativity In Context: Update To The Social Psychology Of Creativity*. Boulder: Westview.
- Berleant A. 2002. *Environment and the Arts*. Aldershot: Ashgate
- Csikszentmihalyi, Mihaly, and Jacob W. Getzels. 1971. "Discovery-Oriented Behavior and the Originality of Creative Products: A Study with Artists." *Journal of Personality and Social Psychology* 19(1): 47-52.
- Csikszentmihalyi, Mihaly. 1988. "Society, Culture, and Person: A Systems View of Creativity." In *Conception of Giftedness*, edited by Robert J. Sternberg and Janet E. Davidson, 325–339. New York: Cambridge University Press.
- Csikszentmihalyi, Mihaly, and Keith Sawyer. 1995. "Creative Insight: The Social Dimension of a Solitary Moment." In *Nature of Insight*, edited by Robert J. Sternberg and Janet E. Davidson, 329–363, Cambridge: MIT Press.
- Csikszentmihalyi, Mihaly. 1998. "Creativity and Genius: A Systems Perspective." In *Genius and the Mind*, edited by Andrew Steptoe, 39–66. Oxford: Oxford University Press
- Csikszentmihalyi, Mihaly. 1999. "Implications of a Systems Perspective for the Study of Creativity." In *Handbook of Creativity*, edited by Robert J. Sternberg, 313-338. New York: Cambridge University Press.
- Csikszentmihalyi, Mihaly and Rustin Wolfe. 2000. "New Conceptions and Research Approaches to Creativity: Implications of a Systems Perspective for Creativity in Education." In *International Handbook of Giftedness and Talent*, edited by Kurt A. Heller, Franz J. Monks, Robert J. Sternberg and Rena F. Subotnik, 81–93. Oxford: Elsevier
- Csikszentmihalyi, Mihaly. 2014. "Introduction to the Volume." In *The Systems Model of Creativity: The Collected Works of Mihaly Csikszentmihalyi*. edited by Mihaly Csikszentmihalyi, xvii-xxiv. New York: Springer
- Curtis, David J., Nick Reid, and Guy Ballard. 2012. *Communicating Ecology Through Art: What Scientists Think*. *Ecology and Society* 17(2): 3.
- Ehrenfeld, David W. 1981. *The Arrogance of Humanism*. Oxford: Oxford University Press

- Eisler, Riane. 2007. "Our Great Creative Challenge: Rethinking Human Nature— And Recreating Society." In *Everyday Creativity and New Views of Human Nature: Psychological, Social, and Spiritual Perspectives*, edited by Ruth Richards, 261-286 Washington: American Psychological Association.
- Feist, Gregory J. 2010. "The Function of Personality in Creativity: The Nature and Nurture of the Creative Personality." In *The Cambridge Handbook of Creativity*, edited by James C. Kaufman and Robert J. Sternberg, 113-130. New York: Cambridge University Press
- Florida, Richard. 2002. *The rise of the creative class*. New York: Basic Books.
- Gablik, Suzi. 1992. *Connective Aesthetics*. *American Art*. 6(2): 2-7
- Gablik, Suzi. 1993. "The Ecological Imperative: Making Art as if the World Mattered." *Michigan Quarterly Review*: 231-247
- Goerner, S. J. 2007. "A 'Knowledge ecology' View Of Creativity: How Integral Science Recasts Collective Creativity As A Basis Of Large-Scale Learning." In *Everyday Creativity and New Views of Human Nature: Psychological, Social, and Spiritual Perspectives*, edited by Ruth Richards, 221-240 Washington: American Psychological Association.
- Gruber, Howard E. and Doris B. Wallace. 1999. "The case study method and evolving systems approach for understanding unique creative people at work." In *Handbook of Creativity*, edited by Robert J. Sternberg, 93–115. New York: Cambridge University Press.
- Haraway, Donna. 2008. *When Species Meet*. Minneapolis: University Of Minnesota Press
- Harrison, Helen Mayer and Newton Harrison. 2004.
<http://moncon.greenmuseum.org/papers/harrison1.html>
- Hopwood, Bill, Mellor, Mary and O'Brien, Geoff. 2005. "Sustainable development: mapping different approaches." *Sustainable Development*, 13: 38–52. doi: 10.1002/sd.244
- Howard E. Gruber. 1988. "The evolving systems approach to creative work." *Creativity Research Journal* 1(1):27-51
- Kagan, Sacha. 2014. *The practice of ecological art*. [plastik] [en ligne]. Available at internet: <http://artscience.univparis1.fr/plastik/document.php?id=866>. ISSN ISSN 21010323.
- Kaufman, James C., and Robert J. Sternberg. 2007. "Resource review: Creativity." *Change* 39:55–58.

- Kaufman, James C., and Ronald A. Beghetto, 2009. "Beyond big and little: The Four C model of creativity." *Review of General Psychology*, 13:1–12.
- Kozbelt, Aaron, Ronald A. Beghetto, and Mark A. Runco. 2010. "Theories of Creativity." In *The Cambridge Handbook of Creativity*, edited by James C. Kaufman and Robert J. Sternberg, 20-47. New York: Cambridge University Press
- Lehrer, Johan. 2012. *Imagine: How Creativity Works*. Boston: Houghton Mifflin.
- Leopold, Aldo A. 1949. *A Sand County Almanac*. Oxford: Oxford University Press, p. 214.
- Manuel-Navarrete, David, Buzinde, Christine N. 1997. "Socio-ecological agency: from 'human exceptionalism' to coping with 'exceptional' global environmental change." In *The International Handbook of Environmental Sociology*, edited by Michael R. Redclift and Graham Woodgate
- Moran, Seana. 2010. "The Roles of Creativity in Society," In *The Cambridge Handbook of Creativity*, edited by James C. Kaufman and Robert J. Sternberg, 74-92. New York: Cambridge University Press.
- Oxford English Dictionary. 2016. "Humanism."
- Radford, Mike. 2004. "Emotion and Creativity." *The Journal of Aesthetic Education* 38(1):53-64.
- Richards, Ruth. 2010. "Everyday Creativity: Processes and Way of Life - Four Key Issues." In *The Cambridge Handbook of Creativity*, edited by James C. Kaufman and Robert J. Sternberg, 189-215. New York: Cambridge University Press
- Runco, Mark A., and Garrett J. Jaeger. 2012. "The Standard Definition of Creativity." *Creativity Research Journal* 24(1):92-96
- Sawyer, Robert K. 2006. *Explaining creativity: The science of human innovation*. New York: Oxford University Press.
- Seitz, Jay A. 2003. "A communitarian approach to creativity." *Mind, Culture, and Activity* 10(3): 245–249.
- Seitz, Jay A. 2009. *A Communitarian Approach to Creativity*
- Stein, Morris I. 1953. "Creativity and Culture." *Journal of Psychology*. 36: 311-322.
- Sternberg, Robert J., and James C. Kaufman. 2010. "Constraints on Creativity." In *The Cambridge Handbook of Creativity*, edited by James C. Kaufman and Robert J. Sternberg, 467-482. New York: Cambridge University Press
- Simonton, Dean K. 1988. *Scientific genius*. Cambridge: Cambridge University Press.

Simonton, Dean K. 1990. "Political pathology and societal creativity." *Creativity Research Journal* 3(2): 85-99.

Thornes, John E. 2008. A Rough Guide to Environmental Art. *Annual Review of Environment and Resources*. 33:391–411

United Nations General Assembly (20 March 1987), "Our Common Future: Report of the World Commission on Environment and Development," <www.un-documents.net/ocf-02.htm>

Ward, Thomas B. and Yuliya Kolomyts. 2010. "Cognition and Creativity." In *The Cambridge Handbook of Creativity*, edited by James C. Kaufman and Robert J. Sternberg, 93-112. New York: Cambridge University Press

Wallen, Ruth. 2012. Ecological Art: A Call for Visionary Intervention in a Time of Crisis. *Leonardo*. 45(3): 234-242

Wolfe, Cary. 2009. *What Is Posthumanism?* Minneapolis: University Of Minnesota Press