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Aesthetics of Sustainability: A Transdisciplinary Sensibility for Transformative Practices

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Contemporary western societies are marked by symptoms of a culture of unsustainability, rooted in problematic modes of knowing reality, across social systems, whether in the sciences, arts or other fields. Transdisciplinary researchers across the world are already aware of these issues and working on resolving them. To contribute to these efforts and focus on a perspective which potential may have been receiving too little attention so far, this article is introducing how a sensibility to transdisciplinarity and complexity can inform aesthetics of sustainability, and why this matters for a global (environ)mental transformation process. The relevance of this approach is discussed with the field of ecological art and the practice of walking.
Keywords*:* sustainability, transdisciplinary sensibility, culture of unsustainability.

1 Introduction

How can a sensibility to transdisciplinarity and complexity, inform aesthetics of sustainability? Why does this matter, for a global (environ)mental transformation process towards more sustainable societies? Systems thinking and a transdisciplinary understanding of complexity may contribute to heal the fragmentation of our modern modus cognoscendi, and engage us into cultures of sustainability. But this also requires specific aesthetic experiences. The sought-after experiencing of reality implies a more-than-conscious mode of knowing. Knowing should become a way of connecting ourselves with the complex world around us. This connecting asks for the involvement of body and soul, and of all the human senses in an integrated way. Specific artistic practices, such as ecological art, and everyday-based practices,such as walking, illustrate the relevance of aesthetics of sustainability.

2 PART 1: From a Culture of Unsustainability to Culture(s) of Sustainability

The notion of "unsustainability" characterizes the multi-dimensional dimensions of the contemporary global crisis of civilization. Most authors writing on this crisis are highlighting its environmental, social and economic dimensions. Fewer authors discuss its cultural dimensions. Among the latter, one major dimension of the contemporary culture(s) of unsustainability which is being discussed, is the problematic character of modernity's dominant modes of knowing reality (besides other, related dimensions such as consumer culture).

Problematic aspects of modernity's modi

cognoscendi include:

- traditional, non-contradictory logic operating at single levels of reality (as opposed to a dialogic informed by several levels of perceptions addressing several levels of reality as well as multiple jumps in logical types within single levels of reality) [1];
- the fragmentation of human understanding across disciplines, and across social sectors/systems, with strongly autopoïetic (i.e. self-referential and self-(re)producing) tendencies of modern social systems [2-4];
- excesses of disembodied, abstracted knowledge, short-circuited knowledge reduced to what is deemed instrumentally efficient by purposive consciousness [5, 6];
- and an overall simplification of knowing, whether in the form of "disjunctive thought" (i.e. knowing through the parts) or whether in the form of a holistic simplification (i.e. knowing through the whole)[1].

Edgar Morin denounced three basic modes of simplifying thought:"to idealize (to believe that reality can be reabsorbed in the idea, that the intelligible alone is real); to rationalize (to want to enclose reality in the order and the coherence of a system, to forbid it all overflow outside the system [...]); to normalize (that is to say to eliminate the strange, the irreducible, the mysterious)" [7]. Gregory Bateson warned us of the limited and harmful rationality of purposive consciousness, which installs shortcuts in thought and offers an appealing "bag of tricks" for techno-scientific developments, but leads us to forget that ecosystems are also part of our mental systems [5, 8].

Sustainability, understood as a search process, should address all dimensions of unsustainability, including its cultural dimension. Sustainability has become a widely used keyword, since the Brundtand Commission introduced "sustainable development" in policy discourse (i.e. development that "meets the needs of the present without compromising the ability of future generations to meet their own needs"). The word has several contradicting definitions, depending especially on whether one wants to stress "limits to [economic and industrial] growth" or one believes in technology's miraculous power to infinitely "substitute" non-renewable natural resources. From a cultural perspective, sustainability can be understood as the search for alternative sets of values and knowledge of the world, reforming the modi cognoscendi and founding an understanding of patterns that connect the economic, social, political, cultural & ecological dimensions of reality. The cultural dimension has thus a foundational value for the whole search process of sustainability.

Sustainability, which is not a fixed 'utopia' but as a search process for dynamic balance, unfolds itself differently according to the specific contexts, allowing the emergence of resilient cultural-natural hypercomplex systems.

These two key notions, resilience and emergence, require some explanation:

Resilience refers to a system's capacity to endure, withstand, overcome, or adapt to changes from the "outside" or from the "inside" environments. In other words, resilience points at the ability to survive on the long term by transforming oneself in relationship with one's environments (dynamically overcoming, rather than statically resisting change). Resilience necessitates the preservation of diversity (i.e. both biodiversity and cultural diversity) and is related to learning from the unexpected. Such learning requires what I called an "autoecopoïetic" openness and flexibility [9, 10], implying a great degree of that form of sagacity that the English language named serendipity.

An autoecopoïetic system is creatively open, and sensible, to environmental disturbances, whereas a merely autopoïetic system (à-la Luhmann) can only be disturbed by already recognized environmental irritations. Autoecopoïesis allows 'emergence', or in other words, the unexpected. When a system is autoecopoïetic instead of just autopoïetic, it is co-constructed by itself and by its environment, i.e. by other systems, thanks to its evolutionary plasticity (instead of setting and designing autistically its development paths).

The concept of emergence points at the creation of a new logic at the level of a system, whereby no analysis of the interactions between the different

[1] I am here only very superficially touching at these issues and notions, assuming them to have become common knowledge for transdisciplinary researchers reading this journal. For a more detailed discussion, following insights from Gregory Bateson [5, 7], Jacques Ellul, Edgar Morin [8, 16], Niklas Luhmann [19], Basarab Nicolescu [1], and David Abram [14], among others, see Kagan [10].

constituents of the system, can suffice to account for the arising of coherent and novel structures at the level of the whole system. Emergence is the engine of complex, unpredictable evolutions in nature and in societies. The logic of emergence is chaotic, bottom-up and rhizomatic (a rhizome is a polycentric/acentric network: e.g. roots of bamboo), as opposed to the constrained, top-down and hierarchic logic of human design and of modernistic development.

However, emergence does not only bring new qualities to the whole system and to its parts. Saying only that "the whole is more than the sum of its parts", would be holistic simplification. Emergence also suppresses certain qualities of the parts, o 'virtualizes' them, under the new constraints imposed by the emerging structures; and emergence does not preclude the existence of rich and complex tensions between different parts, and between the parts and the whole system [7, 11].

This is leading us to the importance of genuinely understanding and dealing with complexity, in order to address the problematic aspects in our modes of knowing reality. Required is an ecological literacy of nature's dynamic webs of life [12, 13], which is rooted in a literacy of complexity. Edgar Morin's approach to complexity, away from both the simplification of reductionism and the simplification of systemic holism, introduces the possibility to think unity and diversity alongside each other, and to think about any pair of terms, with a combination of unity, complementarity, competition and antagonism, altogether forming a complex relationship and calling forward a dia-logical thinking process.

As introduced after Nicolescu, dia-logics is what allows genuine transdisciplinarity: complementing and overtaking the limits of disciplinary thinking (based on linear logic and the "principle of the excluded third"), with the bridging of different "levels of reality" whereby a "principle of the included third" is operating. Only then can the paradigm of simplicity be overcome, and macro-concepts be constructed, such as Morin's eco-auto-organization (which explores the complex organizational relationships between individual life forms and the ecosystems in which they co-evolve and eco-evolve), and autoecopoïesis (which points at systems operating in ways creatively sensible to chaos - i.e. having a certain productive openness to disturbances). Such complexity is embedded in everyday life. It is much more present in life forms than in the most elaborate cybernetic system, in daily language than in formal language, in informal social networks than in formal, top-down organizations.

But what does this all have to do with art and with aesthetics?

3 PART 2: Aesthetics of Sustainability

Since the summer 2010, the ecological artist David Haley keeps repeating to his audiences this one sentence: "We must learn, not to be afraid of complexity!" This has become one of his, and also of my favorite sentences. To achieve this, we need aesthetics of sustainability, which have to be based on an autoecopoïetic sensibility to the environments complex and dynamic webs of life and to the social, political and economic complexities of contemporary societies. My argument has several roots, which I am summarizing below, but are described at more length elsewhere [10]:

According to David Abram [14] historical societies based on phonetic alphabets, and especially modern (industrial and post-industrial) societies, have numbed and suffocated a whole dimension of the human sensibility, which was and is still vibrant among some indigenous peoples: the sensibility to the intelligence of the non-human–and the capacity to bridge perceptions with the non-human–the environment's complex and dynamic webs of life. We need to re-discover this numbed reflexive sensibility, which the arts and culture may play a fundamental role in re-awakening.

When using the term 'aesthetics', I am taking as a basis, John Dewey's understanding of aesthetics as experience, pointing at personal affectivity in everyday life and at a human being's overall interrelationship with his/her environment. "Experience is the result, the sign and the reward of that interaction of organism and environment which, when it is carried to the full, is a transformation of interaction into participation and communication" [15].

Another root of my approach is the movement of ecological art, which developed the notion of "ecological aesthetics" as aesthetics that pays attention and respect to the own complex dynamics of natural phenomena in their relationships to human interventions, and that wants to highlight these aspects in the artistic working process. In other words, the

"ecological aesthetics" aims to highlight the form and meaningfulness of natural processes (i.e. complex processes of eco-auto-organization, as theorized in Morin [2, 16]). Ecological aesthetics is "inseparably linked with the idea that ultimately everything, nature and culture as well, and thus man and his habitat, are connected in an infinite, diverse systems of relationships" [17]. This idea emerged together with the ecological movement of the late 20th century, and allowed to move beyond a Romantic dichotomy between a pristine nature and an extra-natural human culture, and the Modern opposition between primitive nature and civilized culture. "In the course of the growing ecological understanding that did not start until the late sixties, man came to perceive himself as an integral part of a set of connected, natural and cultural eco-systems, and thus also part of the nature surrounding him" [17]. Strelow locates the emergence of this idea in art in the movement from "Land Art" to "Art in Nature": indeed the latter, unlike the former, "do not just seek stimulus from nature, but build her as a partner, as their fellow creator". Ecological aesthetics points at "the traces of this interpenetration of nature and culture" [17]. Because culture is part of nature, "within art, an 'ecological aesthetic' would be a reflexive, socially and environmentally shaping activity", argued Herman Prigann [17].

These authors further discuss the notions of diversity, inter- & transdisciplinarity, and social transformation (as developed in Joseph Beuys' concept of "social sculpture"), as dimensions of ecological aesthetics. They also point at openness to uncertainties outside the art world. This is a very important element: The understanding of complexity, in nature and in human society, requires such an openness to uncertainties and to the agitations of disorders outside the organized fields of art worlds.

The sociologist and philosopher Jacques Leenhardt is explicitly pointing at the "ecological idea" for its introduction of "complexity and the interaction of causalities [into] the circle of artistic disciplines, whose unduly confined framework it opens up". In other words, he argues that the ecological idea, as in "ecological aesthetics", offers to the art worlds the opportunity to leave the orbit of a culture of unsustainability. But this opportunity does not come without challenges: Leenhardt, in his discussion of the insights of the "ecological idea" to art, warns about the consequences of such insights for artistic practices and the kind of aesthetic experiences that are to be expected: These can no longer be limited to merely local objects and relations, but must relate them to wider contexts: "the new interest in complex causalities leads to increased attention to global connections rather than spatially limited situations that cannot carry the real driving forces of the phenomena within them. [...] Objects of ecological aesthetics are not permitted small frames of reference" [17].

Aesthetics of sustainability should not merely based on a holistic sensibility, over-emphasizing the unity and integration of the biosphere or universe [18], replacing the disjunctive paradigm of modernity with a simplistic 'New Age' paradigm, but rather should be attentive to complexity, i.e. combining and contrasting unity, complementarity, competition, and antagonism. Or in Edgar Morin's words: "The systems sensibility will be like that of the musical ear which perceives the competitions, symbioses, interferences, overlaps of themes in one same symphonic stream, where the brutal mind will only recognize one single theme surrounded by noise" [2]. Such a sensibility to complexity, and experience of complexity, is what I'm exploring as constituting the very core of aesthetics of sustainability, together with Gregory Bateson's understanding of aesthetics:

For Bateson, the aesthetic is that which is "*responsive to the pattern which connects*" [8]. He defined the "aesthetic preference" of a mind, as being "able to recognize characteristics similar to their own in other systems they might encounter" [8]. A typically aesthetic question, would be "*How are you related to this creature? What pattern connects you to it?*" Bateson gave the illustration of a group of art students to whom he once asked to explain why a dead crab being displayed, used to be a living thing, (the students were asked to find answers by just looking at the dead crab, and to do as if they had never seen a crab before). The students moved from the observation that the crab showed some symmetry between its parts (left/right), to the observation that the symmetry was not absolute (e.g. one claw bigger than the other), to the conclusion that there existed a similar relation between parts, in the case of one crab ("both claws are made of the same parts") as well as in the crab/lobster comparison and (crab-lobster)/human comparison. They "discarded an asymmetry in size in favor of a deeper symmetry in formal relations" [8].

Bateson called these patterns within the crab, *first order connections*. The pattern connections between crab and lobster, he called *second-order connections*, or what biologists call "phylogenetic homology". Finally, he pointed at the pattern which connects the patterns connecting, on the one hand, the crab and lobster, and on the other hand, the human being and horse. This comparison of comparisons is labeled as third order connections. These three levels of connections, and of perception-conceptualization of connections, are pointing at three different "logical types" (to use Bateson's terminology, after Bertrand Russell; or different "levels of organization" to rephrase into Nicolescu's terms), i.e. different levels of functioning of systems within systems.

This movement illustrated by the arts students' progression in the example, of pattern recognitions across different levels, is what Bateson proposed as the way to think about "the pattern which connects": "The pattern which connects is a metapattern. It is a pattern of pattern" [8].

For Bateson, a strong aesthetic sense is a heightened responsiveness to this meta-pattern uniting the living world, rather than an arrested perception, stumbling upon the first-order or second-order differences between elements of the living world. To prevent a misreading of Bateson here: The differences are indeed what allows the mind to emerge, so that it can perceive the differences, so of course Bateson's argument here is not against the perception of difference, but against a perception that satisfies itself with the fact of superficial difference and hinders the pursuit of the mind's aesthetic probing of the world around itself, i.e. a probing for connections across differences.

For Bateson, the aesthetics of the pattern which connects is that which can provide a sense of aesthetic unity (and, I would add, an ecological ethics in the same process) that modern societies are critically lacking. This aesthetic lack is an epistemological lack: "our loss of the sense of aesthetic unity was, quite simply, an epistemological mistake" [8].

I am however departing from Bateson insofar as he defines aesthetics, in general terms, as that which is "responsive to the pattern which connects". But aesthetics may not always be "connective" to the fullest extent described by Bateson. Indeed, an aesthetic experience can exist, which does not reach the level of "third-order connections" and the generality of the unity of all life forms described by Bateson, and which satisfies itself with a unity of meanings and values (in Dewey's sense) with a narrower scope / at a more limited range. In a Luhmannian sense [19], the existence of more exclusively autopoïetic aesthetic experiences should be acknowledged, as a challenge. The aesthetics described by Bateson should then be qualified as characteristic of aesthetics of sustainability, rather than of aesthetics in general. Aesthetics of sustainability is to be understood as a subset of aesthetics as understood by Dewey, i.e. a form of relation and process-centered aesthetics, which bases itself on a sensibility to patterns that connect at multiple levels.

Coming back to Morin: The insights from complexity theories point not at a holistic sensitivity which would only perceive complementarities and symbiosis, but:

- a complex sensitivity that perceives as much antagonisms and competitions as complementarities and symbiosis, and that transcends the contradictions so as to reveal the complementary tension of antagonism and complementarity;
- a sensitivity to wholeness and order that also perceives and values disorder, disharmony, as well as uncertainty, and that respects genesic chaos.

Such a sensibility to complexity is more relevant to Dewey's understanding of aesthetics than a solely holistic sensibility fixed on harmony. Indeed, Dewey's characterization of the aesthetic experience as an experience of unity should not be misunderstood as a search for permanent contemplation. Rather, as Richard Shusterman explains, "for Dewey, the permanence of experienced unity is not only impossible, it is aesthetically undesirable; for art requires the challenge of tension and disruptive novelty and the rhythmic struggle of achievement and breakdown of order" [20]. Tensions and conflicts are recognized as harboring potentialities for new levels of unity. Dewey's position echoes, at an aesthetic level, with Stéphane Lupasco's logic of contradiction as applied by Nicolescu across levels of perception and levels of reality.

Understood in this way, aesthetics of sustainability highlight the beauty of the complementarity of antagonisms (which is also crucial to democracies [10]). This sensibility was already present in several fragments of Heraclitus on aesthetics, such as the following:

> "That which is in opposition is in concert, and from things that differ comes the most beautiful harmony." Heraclitus (Aristotle, Eth. Nic. 1155b 4 ; frg. B 8 Diels)[2]
>
> "[People] do not understand how that which differs with itself is in agreement: harmony consists of opposing tension, like that of the bow and the lyre." Heraclitus (Hippolytus, Refut. IX g; B 51 Diels)

One shall also be open to chaos (i.e. the chaos of chaos theories, not the chaos of Lyotard's postmodernism) as a genesic source for generativity. Life's "creative evolution" emerges not from computational capacities alone, but from the ability to deal with disorder and ambiguity as genesic forces [16]. Also, an aesthetics of sustainability, which is open to the generativity of chaos, implies a sensibility to emergence (as showed e.g. by the practices of ecological artists who do not try to control fully the natural and social processes with which they work).

4 PART 3: Transformative Practices Informed by Aesthetics of Sustainability

I will now come back to a focus on ecological art, which is one of the most interesting art movements from the perspective of aesthetics of sustainability. Ecological art emerged from the late 60's in North-America and West Europe. It gradually constituted itself into a movement, and developed the notion of "ecological aesthetics" which I already mentioned above. Ecological art finds its roots and inspirations in the works of pioneers and precursors such as Helen Mayer Harrison and Newton Harrison, Hans Haacke, Joseph Beuys, and Mierle Ladermann Ukeles. Its current practitioners include Patricia Johanson, Shelley Sacks, David Haley, Aviva Rahmani, Insa Winkler, Lynne Hull and Betsy Damon, among others [10]. According to a common statement written by the 'ecoartnetwork' (an international network of eco-art practitioners), ecological art "embraces an ecological ethic in both its content and form/materials. Artists considered to be working within the genre" subscribe generally to one or more of the following principles:

- Attention on the web of interrelationships in our environment–to the physical, biological, cultural, political, and historical aspects of ecological systems.
- Create works that employ natural materials, or engage with environmental forces such as wind, water, or sunlight.
- Reclaim, restore, and remediate damaged environments.
- Inform the public about ecological dynamics and the environmental problems we face.
- Re-envision ecological relationships, creatively proposing new possibilities for co-existence, sustainability, and healing.[3]

For example, Helen and Newton Harrisons' *Lagoon Cycle* (1972-1984), which was one of the founding works for ecological art, brought together an artistic inquiry and a thorough scientific work on the complexity of ecosystemic conditions necessary for sustaining the breeding cycle of a specific species of crab (a work for which they also received a science grant). The LC (*Lagoon Cycle*) is an exemplary work of ecological art because it weaves together patterns of ecosystemic, socio-economic and technological complexity, and of inter-personal learning, in a strikingly insightful way.

The LC unfolds a contradictory narrative, with an exchange between a "Lagoon-Maker" proposing technological solutions for ecosystemic restoration, and a "Witness" critically assessing and questioning these proposals. These two main characters are looking into the conditions necessary for sustaining the breeding cycle of a specific species of crab from Sri Lanka, under technologically modified, human-controlled conditions in California. Along their quest for understanding and control, they encounter several difficulties, as well as very peculiar third characters, who constitute ideal-types characterizing the Sri Lankan society and culture, as well as US American / 'Western' society and the working of our market economy.

The Lagoon-Maker and the Witness' learning process is experienced in a dialogue that spans over 7 parts (7 'lagoons'), unfolding reflexively as well

[2] Quotes from Heraclitus taken from Tatarkiewicz et al. (2006), pp. 88-89.

[3] Source: internal communication on the 'ecoart' network mailing-list, in preparation for eventual wikipedia entries (accessed: November, 2011). See www.ecoartnetwork.org for more information about this network.

as epically with a number of realized and imagined experiments with the crabs. Starting with a visit to Sri Lanka (in the first part), and ending with a poetic vision of the "graceful withdrawal" of humanity faced with global climate change, the work achieves a transversality that connects the local with the global, the short-term with the long-term, the culture-in-nature of Sri Lanka and culture-partly-apart-from-nature of the contemporary US.

As remarked by Marga Bijvoet [21], the LC "create[s] a 'world' that reaches out into many different regions' (territories, disciplines, space and time, etc.) both real and imaginative [... which] can be perceived in relationship to one another, including the artists themselves. These relationships, however, are subject to processes, and to change [... and] relative positions come forth in the dialogues/discourses between the two protagonists in their views of structure and content vs. process and context".

Furthermore, the LC works towards a way of thinking that is less atomistic, and more relational, and the attention to these relations is what characterizes the art of the Harrisons, as Michel de Certeau argued in the catalog of the 1985 exhibition of the LC [22].

Beyond the single example of the LC, about the evolution of the work of the Harrisons over the past 4 decades, Marga Bijvoet observed: "The small-scale portable farming pieces extended into planning whole ecosystems. What were at first personal explorations in search of a new art form, developed into large-scale research projects into global survival plans, with proposals and plans, collaborative actions and political and social discourse" [21]. In 2004, the Harrisons themselves characterized their work as "address[ing] the co-evolution of biodiversity and cultural diversity most often, though not always, at watershed scale. [...] 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" [23].

The ecological artist and researcher Tim Collins further described the methods of eco-artists as:[4]

- "framed in terms of critical thinking ; as investigate-ers" and story-tellers of "alter-tales", "seek[ing] to identify conflicting and conflicted belief systems";
- based on "systems knowledge": "we ask nature first, we seek networks, we try to understand the questions of scale, and the relationships between pattern and connection";
- introducing into projects an "unorthodox approach" which, while it can be an "instrumental method", also allows "to open doors and minds" [24].

Aesthetics of sustainability are, however, not only relevant to the practice of ecological art. They also relate to very basic and transversal practices of everyday life,such as walking.

Why is the practice of walking especially interesting, from the perspectives of a transdisciplinary sensibility, founding aesthetics of sustainability? In short, because walking [25-29]:

- stimulates embodied experiencing & learning, embodied action;
- allows contextual perceptions, locally (ecologically–embedded in a real geography & not conveniently virtual), and transversally (moving, exchanging, comparing), at a slow pace, enhancing attention and fostering serendipity (because walking can be potentially iterative, i.e. open to unexpected disturbances);
- bears potentially social and political value, dealing with shared spaces and public space;
- may combine exchange & introspection (because of encounters with others, and of time given for inner change especially when practicing long-distance walking);
- offers an ordinary experience, accessible to all who take the time for walking: walking is low-tech rather than high-tech, and it is open to non elite-wisdoms from all human groups.

In consumer culture, walking is limited to shopping spaces, amusement parks and dedicated half-a-day footpaths for the holidays. However, if one takes the time and effort that some more walking requires, and does it with care and attention (and with the help of walking-based methodologies), one will be learning, while walking (and observing, smelling, touching, attentively, one's surroundings), eventually

[4] In total, Collins listed 53 methods items, categorized in three ensembles: primary, critical and applied [24].

managing to interpret the most subtle and nearly unnoticeable signs on the road sides, readily discovering what one was not looking for.

Walking can become a genuinely transversal method for knowing, sensing and changing the realities of local communities (and combining artistic and scientific approaches).

Transformation may then also occur, as the reshaping of the form of reality.

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