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The Ecology of Life. Reflections on Craft, Biodiversity and Knowledge for Sustainable Development

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Abstract
This paper argues that the crafts provide an alternative way to look at world and have a distinctive role to play in defining new pathways to sustainability conceived of as "the art of longevity", that is to say, the long-term, strategic thinking that promotes effective stewardship of the world natural, social, and economic resources. Based upon an anthropological discussion of the different worldviews, philosophies and ethos of the crafts and science, this paper provocatively argues that the shift towards more sustainable societies and life styles requires of more crafts and less science. It does so by using the example of biodiversity, Defined conventionally as "the wide variety of ecosystems and living organisms: animals, plants, their habitats and their genes", the scientific view of biodiversity excludes humans and considers them as a threat to nature. This scientific view of the world, premised upon the principle of detachment and upon a model of life that radically disjoins Humans from Nature, lies at the core of the current environmental, economic and societal crisis. Craft ethos based upon practice not only does question the separation between humans and nature, but it also presents the possibility of a genuine "ecology of life" that stems from the principle of engagement with, rather than detachment from, the world. As such, it provides a better way to conceptualize a notion of the environment in which humans are an integral rather than a separate part of the earth community, and helps theorizing the relationship between humans and their environment in terms of stewardship rather than exploitation.

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If we want to motivate people around the world
to take action to safeguard biodiversity,
we need to help them discover the amazing connections
between themselves and the world around them,
and then realize the consequences of biodiversity loss
as well as the huge benefits we will all share
if we conserve and use it sustainably.[ii]

The recent resurgence of interest in ideas about craft and its role in modernity (of which the previous and the current Conference are good examples. Cf also Greenhalgh, 2006; Sennett 2009; the 2007 "Neocraft" Conference), are only just starting to pay attention to the possibilities that craft and craftsmanship represent for sustainability, at least in the West (cf. Ferris, 2010). It is my contention that craft provides a powerful pathway to the big transition towards more sustainable societies. Before proceeding further, a word about definitions is in order here.

Definitions of what constitutes "craft" and "sustainable development" (SD) are problematic since they are contextual, and have given rise to a large body of specialised literature that debates their nature over time and across disciplines (see for example Adamson 2009 and Blewit 2009 respectively). I do not intend to engage with such complex debate here, and take a broad view on both. While I frame my own understanding of craft within Adamson's definition of it as 'the application of skills and material-based knowledge to relatively small scale production' (Adamson, 2009:3), I specifically focus on *the process of making*, that is to say, the sensuous engagement with materials, tools, and with all the constituents of the maker's own world (be them natural, social, economic, political and cultural) in which the making takes place, and that leads to the emergence of the finished objects.

Definitions of sustainable development are also highly contested. "Sustainable Development" emerged as a theoretical concept and a field of practice from the merging of the interests and actions of the environmental and the social justice movements (e.g. Dresner, 2002). Despite the multiple disciplinary interpretations of such a term, there is a general agreement that sustainable development is about the interaction between social and natural systems; that the longevity of the planet and of life itself is at risk; that human and social life must develop within environmental limits; and that this can be achieved truly only with a commitment to equity and social justice. Increasingly, the point is made that sustainable debates cannot be limited only to concerns about climate change, peak oil, green technologies and the likes, but must be extended to include discussions about consumers' patterns, life-styles, behaviours and, especially, critical rethinking of human existence on earth (Orr 2002; Speth 2008; Jackson 2009).

In a much quoted statement, Einstein once said that problems cannot be solved within the same framework that has given rise to them in the first instance (in Orr 2000). This is to say, a shift of paradigm is needed. If the "indefinition" of both craft and SD is taken by many to be a weakness, to me it is their strength in so much as it allows us it provide space and the opportunity for such needed paradigmatic shift in the way we conceive of life, human existence, the environment and, among other things, knowledge in general, and knowledge of the world in particular. To put it simply, both craft and SD provides a space to "think otherwise".

That we need a way of shifting the way we look at the world and conceive of the human-natural interaction, becomes obvious when we look at biodiversity, the current rapid loss of which is taken as one of the major indicators of the unsustainability of the current

state of affairs. Another definition is in order here, what biodiversity is. Article 2 of the Convention on Biological Diversity, decided at the UN Conference on Environment and Development, in 1992 at Rio de Janeiro, Brazil, defines biodiversity as

The variety among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems [iii]

In order to draw attention to this key problem, in 2010 the UN launched the Year of Biodiversity. The UN website of this campaign reports the following statement:

Biological diversity - or biodiversity - is the term given to the variety of life on Earth and the natural patterns it forms. The biodiversity we see today is the fruit of billions of years of evolution, shaped by natural processes and, increasingly, by the influence of humans. It forms the web of life of which we are an integral part and upon which we so fully depend. This diversity is often understood in terms of the wide variety of plants, animals and microorganisms' [iv]

The International Union for the Conservation of Nature (IUCN), on its part, defines biodiversity, or biological diversity as

[A] term we use to describe the variety of life on Earth. It refers to the wide variety of ecosystems and living organisms: animals, plants, their habitats and their genes. [v]

What strikes me is that such definitions by some among the most prominent International Institutions actively pursuing and encouraging the conservation of biodiversity, exclude from their concern human life, or at least do not explicitly include it. Even if discursively there are hints that human beings are part of bio-diversity, the working definitions do not include the diversity of human and cultural lives within it. On the contrary, the rationale behind biodiversity conservation policies and actions portrays humans as either consumers of natural resources (hence the need to preserve biodiversity for human life) or as the major threat to it, hence the need for biodiversity rich areas to be protected through natural reserves, for example, even if this means re-locating local communities who have inhabited and managed them for centuries away from specific regions.

It is my contention that such approach to biodiversity is by no means a universal one or even the only possible one; instead, it is specific to Western modernity, rooted in the ontology and epistemology of science and its worldview which, as any other, is culturally shaped and hence locally relevant defined. Indeed, a constitutive traits of many indigenous peoples' cultures around the world, such as for example the Achuar inhabitants of the Ecuadorian and Peruvian Amazon, is that ecological relationships are also as social relationships. Such cultures do not operate any distinction between the world of humans and the so called world of nature. Social and physical worlds are conceived as one because they are constituted by entities, both human and not human, that live in close intimacy, with such a degree of interconnection that touching one inevitably has repercussions upon the others. It is a world that is never static or given once and forever; on the contrary, it is constantly reshaped and brought into life every time anew by the activities and relationships of humans with animals, plants, organisms, spirits, and the dead (cf. Descola 1994).

How have human beings come to be excluded from the realm of Western understanding of the natural world, as depicted in the scientific understanding of Biodiversity? And is there a way in which Humanity can be restored to it? These are the questions that guide my reflection in this paper.

The world of science and the world of people

How do the terrible marks of gender and race enable and constrain
love and knowledge in particular cultural traditions, including the modern natural sciences?
Who may contest for what the body of nature will be? (Haraway 1989:1)

The 'scientific' definitions of biodiversity are, indeed, premised on a specific view of the world that disjoins radically humans from nature. It is this worldview, which I call the 'scientific view of the world' and its view of the natural world largely as determinate and mechanical that has led to Western current estrangement from the animate earth. The environment, in this view, is conceived as a physical, material world whose reality is given quite independently from our experience of it, and that we can know only through the compilation of data drawn from detached observation and measurement, and communicated in the forms of graphs, diagrams, numbers and images (Cf. Ingold 2000).

Based upon an ontology of detachment, the scientific method praises 'objectivity' as the only and truthful 'way of knowing', and the only acceptable and authoritative way of producing knowledge about the world. The claim of natural science to deliver an authoritative account of how Nature "really works" is founded upon the premise of a disengagement of the observer from the world, which thus sets up a division between humanity and nature.

The genesis of this 'estrangement' has been profusely documented by philosophers of science, especially feminist philosophers and historians of science (e.g. Haraway 1988; Harding 1986) who have analysed at length the political consequences of the scientific method on women and the resulting de-authorization and marginalization of ways of knowing not based upon the same principle of objectivity. This applies to women's academic knowledge as much as to indigenous ways of knowing and knowledge produced through 'making' rather than seeing. As Ingold writes, the claim of "objectivity" is underwritten by a double commitment, namely the superiority of humans over non humans; and the commitment to rational and universal reason (cf. Ingold 2000: 15). The first lies at the heart of Western culture; the second at the heart of Western academic knowledge and the epistemology of science, to the point of being its defining feature. It is by this capacity to reason that, in the Western grand narrative, Humanity is distinguished from, and superior to Nature. According to such grand narrative, the only way to "really know" and understand nature and the life of organisms, is to take an "objective" look, to step out of it. In other words, the knower (researcher/observer) must locate themselves outside the realm of what is to be known/researched/observed, that is to say, outside the realm of Nature. The very possibility of scientifically (i.e. truthfully) knowing Nature rests, therefore, upon its very separation from Humanity.

This, I believe, is the reason why human beings do not figure within the realm of biodiversity which classify and compare the totality of living things, and catalogue them according to intrinsic qualities that they are said to possess by virtue of genealogical connection. "Species can only be enumerated in the natural world by a humanity that has set itself above and beyond it, and that –being simultaneously everywhere and nowhere- can see the whole of nature in its sights" (Ingold, 2000a:217).

The 'ontology of detachment' that sustains the whole worldview of science is only apparently a matter of semantic; its practical relevance is at least twofold. Firstly, it provides the core canon of academic thinking and knowledge production, so that the scientific method of enquiry has become the template for research *tout court.* Secondly, because the data produced through this method informs popular as much as policy understandings of environmental problems, it informs behaviours, policies and interventions upon the natural world.

In the process, however, we have forgotten something fundamental which is, as Abram reminds us, that '[W]e are human only in contact, and conviviality, with what is not human' (Abram, 1996:12). In such a framework, being aware of and experiencing the non-humanity of the (natural) world actually means being aware and experiencing our own humanity. In the process, then, we humans have become estranged from Earth. Such estrangement can be particularly evident at the level of semantics, but it does not stop there. Take for example the use of the term "globe" to refer to the Planet. The only way we can think of the Earth as a globe, Ingold (2000a) tells us, is if we look at it from afar, so as to be able to see it in its entirety So, the earth can be considered as a globe only from without, if external to the observer, like in the sight from space. That is, when physically, as well as metaphorically, men leave the planet. It is no coincidence –I think- that men's landing on the moon is mentioned in the introductory paragraph of the Bruntland Report on the State of the Environment, published in 1987. The significance of this coincidence rests on the fact that the Report launched internationally both the idea of sustainable development, and of 'global problems'. The paragraph in question reads:

In the middle of the 20th century, we saw our planet from the space for the first time. Historians may eventually find that this vision had a greater impact on thought than did the Copernican revolution of the 16th century, which upset the human self-image by revealing that the earth is not the centre of the universe. From space, we see a small and fragile ball dominated not by human activity and edifice but by a patterns of clouds, oceans, greenery, and soils. Humanity's inability to fit its doings into that pattern is changing planetary systems, fundamentally. Many such changes are accompanied by life-threatening hazards. This new reality, from which there is no escape, must be recognised-and managed[My emphasis] (WCED 1987:1).

The image of the world conveyed by this statement is problematic. For a start, the earth-as-globe is seen as an object of contemplation; consisting of pure physical matter and substance, it is explicitly detached from the domain of lived experience. More importantly, the implication is that the world as it 'really is' can only be seen and appreciated by leaving it. Finally, such view definitively proves that the world has a *prior* ontological existence independent and separate from the life forms, including human life, that occupy it. The idea that the essence of human existence is seen to consist in the transcending of physical nature, opens the way to the idea of property and thus appropriation. Semantic examples abound here: the very genesis of the Sustainable Development discourse is rooted in the belief that we have inherited the Earth and thus we are responsible to leave it to the next generation in good conditions. This is the reason why so much of the SD discourse today has to do with 'managing' a planet which is 'ours' to manage. This management is often rendered in the language of intervention: the world is an object of *transformation* by its present owners-occupiers (humans); the imposition of human design and technology transforms it and replaces the natural world with an 'artificial' one. The two worlds are incompatible and/or mutually exclusive. This is why we are constantly concerned with limiting the perceived destructive consequences of human activity. The discourse of *intervention* assumes the existence of a world already constituted through the action of natural forces, that only later becomes the object of human interest and concern. The natural and human worlds work separately. Humans can observe nature, protect or destroy it, but they do not *dwell* in it. This image of the earth as depicted in the 'global environmental change/problems' in fact expels humanity from the life world, and rather than reintegrating human society into the world of nature, it marks its final separation (Ingold, 2000:154).

Such semantic, as I wrote, has practical consequences. Having migrated to the realm of policy making, it has led to a divide between the world of techno-science and policy, and the world of everyday life that is the world of immediate experience, one that we perceive with our senses in the form of wind, rains, sunshine, and the air that we breathe, and so on. Far from denying the seriousness of the environmental crisis, of climate change, and of biodiversity loss, my point is that there are enough evidence to

believe that many of these problems have indeed their source in this very separation and alienation of humanity from the 'natural' world, that techno science perpetuates. It is this separation of scientific understandings of the world from everyday life that to a great extent, I reckon, is responsible for the current unsustainable state of affairs.

The role of craft

Craft can help mediate between these differing understandings of the environment by contributing to find ways of drawing techno-scientific expertise together with the experience, and the knowledge that comes from it, of ordinary people. This calls for both a revaluation of the environmental experience and creative interventions of lay practitioners, and an acknowledgement that science and technology, too, are local narratives about the world, as much as indigenous people's narratives about their worlds!

It is my contention that 'making' can help to fundamentally rethink the concept of the environment, in ways that allow us to bring in the lived experience of our engagement with our surroundings. At a very practical level, these concepts about the world and the production of knowledge are conveyed in the education systems, in the notion of the world/earth we learn at school. What strikes me is that we are actually educated to become unable to consider, to focus on, and to give authority to anything outside the realm of humanity; to 'perceive' nature in forms other than resources to be used to satisfy human needs. The newly emerging field of sustainability science is loosening the rigidity of some of the conventional scientific boundaries and beliefs, acknowledging the importance of reaching outside these boundaries; the value of interdisciplinarity and, to a certain extent, of local and indigenous forms of knowledge. What remains unquestioned, yet, is the pillar of the scientific method: the ontology of detachment that validates the claims of objectivity and rationality.

As an educator interested in transformative rather than transmissive knowledge, I see that craft contributions can be particularly effective in the debates and practice around Education for Sustainable Development (ESD); in promoting what UNESCO (2010) call 'learning to transform oneself and society', and thus contributing to the paradigm shift Einstein was referring to. Transformative rather than transmissive learning '*involves experiencing a deep, structural shift in the basic premises of thought, feelings, and actions. It is a shift of consciousness that dramatically and irreversibly alters our way of being in the world. Such a shift involves our understanding of ourselves and our self-locations; our relationships with other humans and with the natural world; our understanding of relations of power in interlocking structures of class, race and gender; our body awareness, our visions of alternative approaches to living; and our sense of possibilities for social justice and peace and personal joy.*'[vi]

Education is therefore a fundamental aspect of sustainability thinking. "[Education] enables people to develop the knowledge, values and skills to participate in decisions about the way we do things, individually and collectively, locally and globally, that will improve the quality of life now without damaging the planet of the future" (UNESCO 2011). My own experience of apprenticeship to a traditional silversmith master in Ecuador, has taught me that learning a craft, that is, the practice of a manual skill embedded within a creative process, intimately bound up with its materials and tools, and located within an established tradition, entails more than the acquisition of a set of techniques. It is a training of the mind as well as the body, indeed of a person's entire way of being and knowing (Cf. Marchand 2007; Kondo 1990). As I and my co-authors have claimed elsewhere (Ferraro et al. 2011), the view of knowledge entailed within craft education and practice contributes to overcoming a series of classical hierarchical divisions between teaching and research; theory and practice; and intellectual and practical knowledge. It seems to me that a focus on the creative process of making whereby objects come into being, makes evident that craft is a way of knowing in its own right. As such, it brings a new dimension into the ongoing debates on the nature of

knowledge (cf. Harris 2007; Ingold 2000, 2007; Lave 1990; Lave and Wenger 1991). It can provides a template of wider application for learning and teaching not as processes of transmission of knwoledge-as-a-thing that changes hands (or minds) from experts to novices by way of representations coded in language or other symbolic media, as cognitive scholars affirm (e.g. D'Andrade 1981). On the contarry, the way in which craft skills are acquired in practice leads to think that practitioners 'grow' into knowledge through the experience of being placed within a context in which they can develop their own skills and dispositions (Ingold 2000; 2007; Lave & Wenger 1991).[vii] Learning-through-making, which is the hallmark of craft education, contributes to the view that learning is a journey of exploratory practice; a sensory education; a "fine-tuning of perceptual skills" through which the environment -i.e. the relational context of the perceiver's involvement in the world- is discovered (Ingold 2000, 2001; Lave 1990; Gibson 1979;).

One of the core elements of ESD is that practice and theory can only go hand in hand, and that one does not necessarily come first or is more important than the other. Hence, craft education model instils a way of knowing that challenges the classical division between 'practical know-how' and 'theoretical knowledge'. As such, it is not only a way of thinking otherwise but also a way of knowing otherwise in its own right, and one which contributes to opening new ways of reconfiguring the relationship around knowledge while also expanding the debates on the nature and modes of the learning process.

Conclusions

Craft provides a pathway to SD in more than one ways. Its model of learning and teaching questions the separation between humans and nature and offers the possibility of a genuine 'ecology of life' based upon an alternative mode of knowing and understanding the environment, the natural world, and biodiversity itself that comes out of the active engagement with, rather than detachment from the environment within which each of us lives, and that experiences every day in the form of breeze, wind, smell, etc. The attention to the process of making, to the sensuous engagement with materials and tools educates the maker to be present with his/her whole beings, mind, body and senses, reminds us that we live our life through our senses, all of them; that we apprehend our environment and find our way through the world through our senses and not only through our mind and/or intellectual thought. In so doing, the craft model of knowing also restores the scholarly importance of the senses not only as objects worth of scholarly attention, but more importantly as appropriate ways of knowing in their own right. Such and ontology and epistemology provide a powerful research methodology that helps restore the fully sentient human being, and puts the subjective, the body, and the senses back to where they belong: at the core of the process of knowing. To the ontology of detachment of science, craft counteroffers an ontology of engagement; of working with rather than on materials (be them natural resources or indeed people). In contrast to the world depicted in techno-scientific discourses as a ready-made world, prior to our sensuous experience and awareness of it, solid, with rigid boundary and external to us, craft offers a world that is an open project, in constant becoming, as we all are, and in so doing, craft provides also a powerful contribution to the emerging attempts to shape a sensuous scholarship (Stoller 1997). That which in some contexts, at some point in time, has been taken –erroneously- as craft weakness, namely its nature of sensory and bodily practice, I reckon is its strength since such bodily practice is, nevertheless, indissolubly linked to the mind . As such, it can contribute to a real *sentient ecology* (Anderson 2000, in Ingold 2000: 25) that is to say, to the production of a knowledge of 'Nature' as lived experience; and a knowledge of the environment that is impossible to transmit in abstract terms and in contexts outside those of its practical application. It is a knowledge based upon experience.

To conclude, if the transition to more sustainable societies requires paradigmatic shifts in our thinking about existence and the role of humanity on Earth, the power of craft lays precisely in its potential to question, rethink, and subvert those taken for granted concepts of the world; of models of knowledge and education that have led the world to the verge of its disappearance. To end on a provocative note, then, perhaps we need more voices from craft and less from science to lead the transition to more sustainable lives!

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[ii] Quote from the “Presentation of the year of Biodiversity”, source: http://www.cbd.int/2010/messages/ accessed 16 January 2012

[iii] Source: http://gbo3.cbd.int/the-outlook/gbo3/introduction.aspx, accessed 16 January 2012

[iv] Taken from the UN website: http://www.cbd.int/2010/biodiversity/, accessed 6th September 2011

[v] http://www.iucn.org/iyb/about/ accessed 14/10/2010

[vi] Edmund O'Sullivan, Professor for Education at the Ontario Institute for Studies in Education at the University of Toronto. http://www.art-ecology-education.org/en/5-themes.html accessed Tuesday 6 September 2011.

[vii] Things are, in fact, much more complex, as recent studies on non-verbal or non-linear communication have demonstrated (cf. Marchand 2007).