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ECOLOGICAL DESIGN THINKING FOR THE 21ST CENTURY

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ABSTRACT

Over this century we continue to look for the ideal conditions to generate sustainable ways of education. Many of the significant actions lie the ways in how education relates to design and ecology. The new way of ecological design thinking here proposed constitutes three fundamental aspects: reconnecting with nature, rediscovering nature and reflecting on the ways in which we forecast our designs. The Symbiotic Design Practice provides a flexible integral methodological framework for configuring teaching-learning elements that approach the new ecological profile that the designer should have.

Keywords: Ecological design, Symbiosis, Design Thinking, Nature Centered Design

1. INTRODUCTION

In the beginning of the 21st century we continue to look for the ideal conditions to generate a sustainable balance. Thanks to the ecological thinking inherited during the second half the 20th century, new movements are beginning to take shape. To name a few 'degrowth' (Weiss & Cattaneo, 2017), the 'circular economy' (Webster, 2015), 'eco-linguistics' (Stibbe, 2015) and 'learning from nature' (Sagarin, 2012) are vivid examples of a collective effort to project a virtuous behavior that reconnects human beings with their original creativity towards a 'symbiotic consciousness' (Kelly, 2014) with the rest of the web of life. These ecological manifestations require the establishment of educational methodologies that integrate strong ecological principles in order to project an organizational, experiential and behavioral action.

According to researchers of the Schumacher College in England the thought of ecological design or Ecological Design Thinking is a creative process that integrates environmental, economic and social aspects (Schumacher College, 2018). Teachers of this leading school emphasize that most schools or design courses follow a traditional form of design focused on the human as a user, guided by technological trends or following industrial processes which replicate the same problems we are trying to solve. This and many other design-environment centered schools, stress that today it is required to transmit to students and practitioners of design not only the design process, but a systemic thought in which tangible and intangible aspects centered on the ecosystem dynamics of our planet can be solved integrally.

We are still looking for an amalgamation in the ecological design philosophy but also looking for a consolidation in the ecological pedagogy or ecopedagogy (Kahn, 2010). Several eco-philosophical and eco-pedagogical precepts have been emerged in the last three decades. For example, the idea of deep ecology (Naess, 2010), the integral theory (Wilber, 2008) and the biophilia hypothesis (Kellert, 2012). These have set the basis of action for the academy with a strong eco-philosophy. The implementation of an eco-pedagogy combined with the design process such as the 'Symbiotic Design Process' (Sánchez Ruano, 2016) allow the action of teaching-learning for the development of an effective sustainable, biomimetic, regenerative or symbiotic projects. This example of eco-pedagogy implemented in design allows for the generation of a new profile for the 21st century designer.

2. DESIGN EDUCATION AND THE RADICAL ECOLOGIES: AN AGE OF ENLIVENMENT

Recognizing the need of designing hand by hand with nature interrelates the action of deep ecology which emphasizes "the intrinsic value of all beings and appreciates all cultural and biological diversity (Naess, 2010). The way in which our creative being shows love for creating conditions that generate more life lies in a genuine identity that the designer seeks to acquire. This self-interest in learning to be part of nature through what is designed is a virtue that each design academy must pursue in its curricula. This ecopedagogy involves questioning each purpose as planetary beings.

We have transcended the Age of Enlightenment, where science provoked a rational ordering of human affairs, to a liberated Age of 'Enlivenment' (Weber, 2013) where the sciences and the arts interrelate to give better answers about human intentions. This change of era is not only prompting new moral behaviors, but also collective planetary ethics. We look to nature for answers, but also for help to structure our questions about such an ethic (Riechmann, 2006).

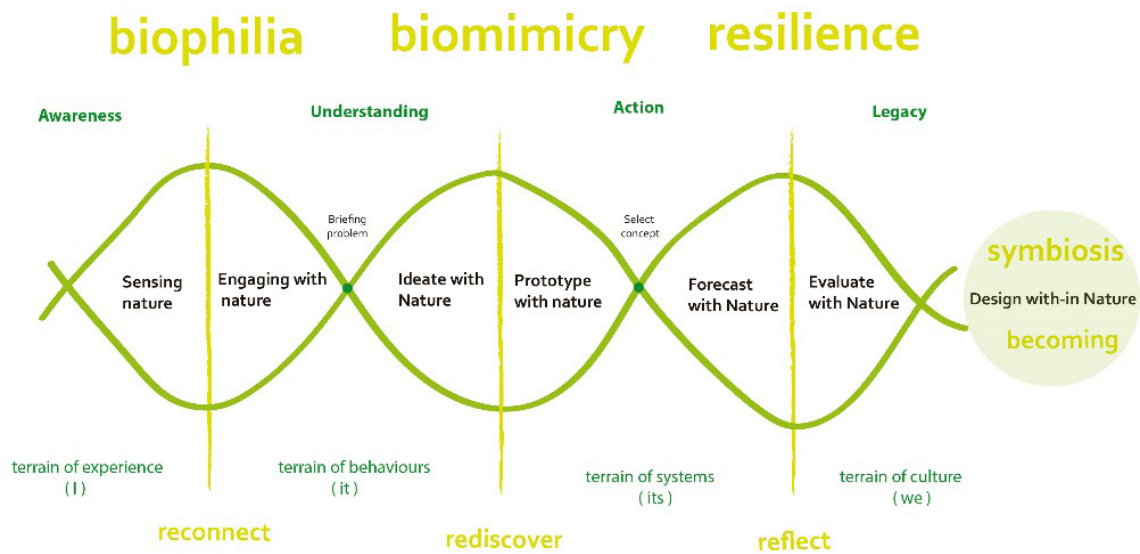
In the Age of Enlightenment, the power to manipulate the natural world and to separate mind and body brought technological intentions, many of which damaged the natural world. As we transcend the Age of post-Enlightenment through ecological design, it appears that our arrogance is decreasing. A mutual emancipation is happening, through the Age of Enlivenment. It is moving from the shallow ecology of the Enlightenment to the deep ecology of the Enlivenment. Here, anthropocentrism dissolves or is acknowledged at a different level. We see our design powers as gifts that need to be deeply rooted in empathy, kindness, humbleness and a modesty that life itself inspires. Moreover, we seek to take into account the intrinsic symbiotic relationship between humans and nature.

We need to consider how nature is constantly informing us how to design. To do so, we need to stimulate a sense of learning from all living things. This kind of vocation exists in all of us. If we are to move to a truly sustainable future, then all designers will need to be familiar, not only with designing with nature (McHarg, 1996), but 'with-in' Nature. As we open up to learning from nature and design with nature, with such a realization, we can begin to acquire new knowledge. As Ivan Illich (in Goldsmith, 1996, p. 336) points out, 'most learning is not the result of instruction but rather the result of unhampered participation in a meaningful setting'. This "meaningful setting" is our living Earth, and ultimately it is what inspires us to design.

3. RECONNECT, REDISCOVER AND REFLECT WITH NATURE THROUGH THE DESIGN THINKING PROCESS

There are principles, metrics and tools that make up the new eco-pedagogies required for this century. The Symbiotic Design Process (SDP) can be considered as an effective tool in the teaching-learning of design disciplines. The SDP process explicitly integrates the Design Thinking process (Plattner, Meinel, & Leifer, 2013) and the quadrants

of Integral Theory (Wilber, 2008) which are reinterpreted through three steps: reconnect, rediscover and reflect which reaffirm three concepts that ecodesign has been acquiring and conforming through the last decade: biophilia, biomimicry and resilience. In this way, this ecopedagogic proposal can then be reinterpreted as a process of Ecological Design Thinking (Figure 1) which is explained below.



[Figure 1]. Simbiotic Design Process. Sanchez Ruano (2016)

The reconnect with nature phase, includes studying the origin of biophilia as an initial or preparatory strategy. Within this phase, awareness exercises such as Goethean observation (Irwin, 2004), ecosomatics (Enghauser, 2007), meditations and visits to spaces where nature can be explored can be implemented. Within this phase curiosity and a naturalistic lens is activated allowing us to get involved in the meaning of being nature, we are aware of it and we understand it.

The rediscovery of nature phase is when the details begin to emerge through the study of patterns, rhythms, forms, ecosystem actions dictate a true language. Here the use of biomimicry as methodology which allows us to go beyond the study of mere aesthetic, but a functionality and efficiency of other organisms in solving human problems and seek creativity to create conditions conducive to life. This conscious imitation of the geniuses of nature, is a way to consult them and thus implement their intelligence in design concepts. This imitation is given through various tools such as biomimicry thinking (Baumeister, 2013), biotriz (Vincent, Bogatyreva, Bogatyrev, Bowyer, & Pahl, 2006), biodesign process (Egido Villarreal & Universidad, 2004), among others.

A third step, allowing reflection on the design process by the hand of nature will be the impact of our creation, a strategy of resilience as practice. Resilience thinking then helps to forecast and evaluate what effect our design proposals will have on the world, acquiring a true ecological ethic to project a significant legacy. In this last phase, prospective tools and reflective evaluations can be implemented to capture a critique of actions that open a gap to a symbiotic consciousness. The whole process concludes in the realization of learning design centered on nature, being part of nature as we design.

This process is consolidated as the tradition of the Design Thinking Process format of the DS School Stanford (Curedale, 2013) and the Double Diamond Process (Design Council, 2015) where ecological design thinking diverges and converges through those techniques and exercises properly tested and analyzed by students and teachers forming a meta-methodology.

4. THE NEW PROFILE OF THE ECOLOGICAL DESIGNER OF THE 21ST CENTURY

As we approach the transformation of the education system through ecological wisdom, what then will be the profile of the designer of the 21st century? Designers can be seen as 'synthesizers whose craft is to respond to the various design requirements in integrative and holistic ways' (Vol 1 A-H Encyclopedia of creativity., 2011, p. 525). As ecological design permeates a shift in worldviews. Precisely is how aspirations and intentions confront how we are teaching 'to be critical about narrow or holistic worldviews' (Wahl & Baxter, 2008) as a design pedagogy.

There is still the problem of integration of ecological thinking into design education in forming the new profile of the designer. We can identify 4 elements that help to reveal the new profiles:

- 1). Individuals recognizing the self as natural beings
- 2). Individuals and groups willing and open to learn from nature
- 3). Acting in uncertainty and complexity as part of the Earth community
- 4). Becoming one with the world in every creation

As the design academy fosters creatives, it also needs to form wise individuals by developing several new characters. Emergent positions for design in the 21st century were studied by a group of researchers from different universities in the UK (Inns, 2007, pp. 11-26). Through this initiative, four new emergent positions and six emergent roles were postulated for the designer. The new emergent roles for the designer in the 21st century, as suggested by Inns, are described as follows:

- Designer as negotiator of value: Here the designer has an important role to play in negotiating decisions within complex situations.
- Designer as facilitator of thinking: The designer will need to know how to mobilise and energise the thinking of others.
- Designer as visualizer of intangible: Although the contemporary designer already visualizes and synthesizes future possibilities, they still need to make association with the visualization of the abstract and the intangible (systems, experiences, emotions and so on) and to find ways to communicate these intangible concepts with others.
- Designer as navigator of complexity: The designer can help others to understand complexity, but also an appreciation of complexity theory will help designers to understand their own role.
- Designer as mediator of stakeholders: Increasingly the designer is able to become a mediator of solutions for multiple stakeholders who often have different perspectives, needs and expectations.
- Designer as coordinator of exploration: The designer has always played a leading role in planning future outputs, including, for example, concepts, prototypes and plans for future implementation and production. The 21st century designer must be able to coordinate exploration of ideas between the technical, the ecological and the contextual.
- Through analyzing these emergent profiles of the designer of the 21st century and, by correlating them with the ecological techniques presented earlier, we can postulate four other emergent profiles as follows:
- The biophilic being. To engage the individual self with nature, we open our minds and organic bodies to receive the teachings. Becoming an ecological designer implies a preparatory stage that is immersive and experiential, thereby allowing the worldview to change.
- The biomimetic practitioner. As we are more open to learning from nature, we begin to enhance our creativity by developing concepts and solutions inspired by the wisdom and interrelationships with a more-than-human world.
- The resilient thinker. As we face uncertainty, we begin to realise how resilience thinking is fundamental to allow the designer to picture design ethics along with the visions of the future in every design that is created.
- The symbiotic designer. This profile occurs when the designer's ecological integrity is recognized when designing becomes meaningful. The individual self and the collective self become one with the living world and with the universal truth, flourishing along with life.

These four profiles will be considered as the integrated essence of the new profile of the ecological designer. The need now is clear. The design academy needs to make a transition or revitalization of its design pedagogy by bringing new alternative and conventional practices together. The eco-techniques suggested here might be the ones that provide that transition to theory and praxis for ecological design and the acquisition of new profiles.

5. CONCLUSION. THE VITALITY OF THE ECOLOGICAL DESIGN AND THE NEW SYMBIOTIC PERSPECTIVE

The Ecological Design Thinking skills are aimed at facilitating an interdisciplinary dialogue, providing a holistic/systemic perspective for questioning human paradigms informed by natural patterns and promoting the pragmatism here in the present with all available resources. As an educator, it seeks ecological wisdom and provides the students with a critical inquiry on intentionality. As a biophilic being, a biomimetic practitioner and a resilient thinker, the designer becomes proficient in creating not only objects, buildings, systems, communications or services but an expanded worldviews and provide a meaningful and hopeful heritage.

What can the design academy (lecturers, researchers) do with this? For a design educator, these strategies may present an appealing image for the design schools of the 21st century, where our recognizable ecopedagogical frameworks promote life itself. Establish programmes, modules and the formation of design communities will help to consciously bring about a fundamental basis for promoting a flowing change within nature and the limits of technology, thereby crafting a meaningful human presence on planet Earth. This should ignite a vital consciousness, encouraging design professionals and academic practitioners to 'design with and within nature'. The more conscious we become of the revelations that biodiversity embeds within our symbiotic consciousness, the healthier our society will be.

By incorporating the SDP, the design academy should be able to build ethical values, strengthen creative practices and provide critical views on decision-making about technology, but most importantly, it will be able to develop an integral worldview by acquiring a symbiotic consciousness.

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