What Got Us Here, Won't Get Us There

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Designing as Nature. Defining an ontological path

David Sánchez Ruano
Tecnológico de Monterrey, Escuela de Arquitectura, Arte y Diseño
e-mail: david.sanchezr@tec.mx

Abstract: The article discusses a workshop on nature-centered design aimed to identify the convergence of theories and pedagogical tools to achieve societal balance with the natural world. The workshop explored the path towards designing as nature and focused on regenerative cultures and more-than-human considerations. A mixed methods technique to analyze and integrate information was used. This activity was divided into two parts: exploring the ways of nature-centered design and learning to co-design with nature. Attendees from different universities worldwide participated. The main activities were mapping nature-based concepts, exploring a syllabus, and structuring nature-centered design definitions. A detailed description of the workshop outcomes is provided. The article concludes by highlighting the need for responsible innovations, advocacy for non-human stakeholders and interbeing practices through design.

Keywords: Nature-centred, non-human, life-centred, symbiocene, design ethics.

1. Introduction

The track "Co-designing with nature towards resilience and diversity" was one of the calls for the 13th edition of the European Academy of Design Conference at the University of Dundee in April 2019. On this occasion, organisers selected proposals aimed to bring conversations, knowledge, insights and reporting of research to discuss nature-inspired design. The track had a particular focus on the promotion of regenerative cultures and how this relates to emerging ethical considerations. For this event the author developed a workshop entitled "Nature-Centered Design. Exploring the path to design as Nature" (Sánchez Ruano, 2019).

The following questions were the guide for this workshop proposal: What theories for change—and tools—might be required to envision a regenerative design culture? Can nature inspired design offer new insights in the creation of new resilient futures? What are the theories of change that can help achieve societal balance with the natural world? How can we as designers create new contexts for all design stakeholders to support life on earth? Such questions set the basis to explore along with several experts the agency for designing beyond the human.

2. Reframing nature centredness

The idea of this proposal was with the aim of finding the right path due the increase of proposals from several disciplines, including arts and sciences, to develop a clear focus on the idea of co-designing or designing with and for nature. It seems that the lexicon or the synonymous wording brings a myriad of concepts that put “nature” and all its connotations at the centre of study. Notions such as design for sustainability (Birkeland, 2002), ecological design (Ryn & Cowan, 2007), biophilic design (Beatley, 2010), biomimicry (Mathews, 2011), cradle to cradle (McDonough & Braungart, 2013), transition design(Irwin, 2015), regenerative design (Wahl, 2016) have influenced the ontology of design, and most importantly the human-centered design culture.

Restoring ecosystems, designing for animals or providing shelter for endangered vegetable species are just a few manifestations of how human intellect recognizes not just the value of maintaining the so-called “environment”, but also the transcendental aspect of designing as nature. Various case studies reveal the necessity to incorporate new ways of designing for and with nature but most importantly as nature addresses. For example, agroforestry projects (Miccolis et al., 2019) demonstrate how a culture of care for the soil, the interrelationship with animals and humans makes evident this way of natural rhythms and patterns. Another example is how bees guide us to understand new languages and a co-evolutionary ethic among anthropogenic habitats (Collado et al., 2019). Yet another example is the company Ecovative, which despite manipulating mycelium at an industrial level, set precedents to bring us closer to the microworld (Karana et al., n.d.) and thus manifest ethical biotechnology. These few examples reveal a need to create new statutes, policies, and endeavours that promote human and non-human flourishing.

The main aim of this workshop stated a nature centred design way, calling academics to structure or confirm the design agency that the guild might be questioning. The audience was from all backgrounds who attended the conference. PhD students, researchers and design school teachers interested were welcomed. Sixteen attendees from the following universities were participating: University of Gothenburg, Glasgow School of Art, Loughborough University, Israel Institute of Technology, Newcastle University, Arizona State University, University of the Aegean, Konstfack University, Limerick Institute of Technology, University of York, Berlin Weissensee School of Art, Kwantlen Polytechnic University and one member of the Design Week Netherlands.

The workshop required an inspiring setting or space. It is proven that exploring nature related concepts outside the conventional design classroom can provide better insights on how we learn from nature (Hagood, 2010; Wood, 2011). In this case was the Dundee Botanical Garden where the participants were able to see and feel directly the complexity and truth of the concept explored.

The following two sections describe the development of the workshop revealing a potential narrative and insights to understand where we are going and what might be the right centredness.

3. Exploring related terminologies

The following framework (Figure 1) illustrates how the workshop premise was aimed to interlink and explore concepts and its agency to find nature at the center. Nowadays the arts and the sciences implicitly include the notion of nature-centredness. Related concepts such as Nature-based learning(Kuo et al., 2019), Nature-based solutions (Raymond et al., 2017; Seddon et al., 2021), environmental education, biomimicry, biophilia and regeneration, among others prevail in the periphery . In the case of design we mostly focus on our human centeredness but the influence of ecology, biology, psychology and related life sciences are intersecting its pedagogy, but most importantly our behaviour towards our human agency.

Biocentrism, ecocentrism and environmentalism were set to reveal values and principles that are closed to the sciences but also in the humanities, the same happened with the definition of philosophy, ethics and design itself but being close to nature as agency. Questioning, reasoning and

dialoguing also was the aim of the workshop. For this reason, focusing on one area to explore nature-centered design was never the purpose, by contrast, trying to incorporate as much as concepts, principles, frameworks and methodologies to open a window to visualise how disciplines are close to each other to reveal transdisciplinary and multidisciplinary.

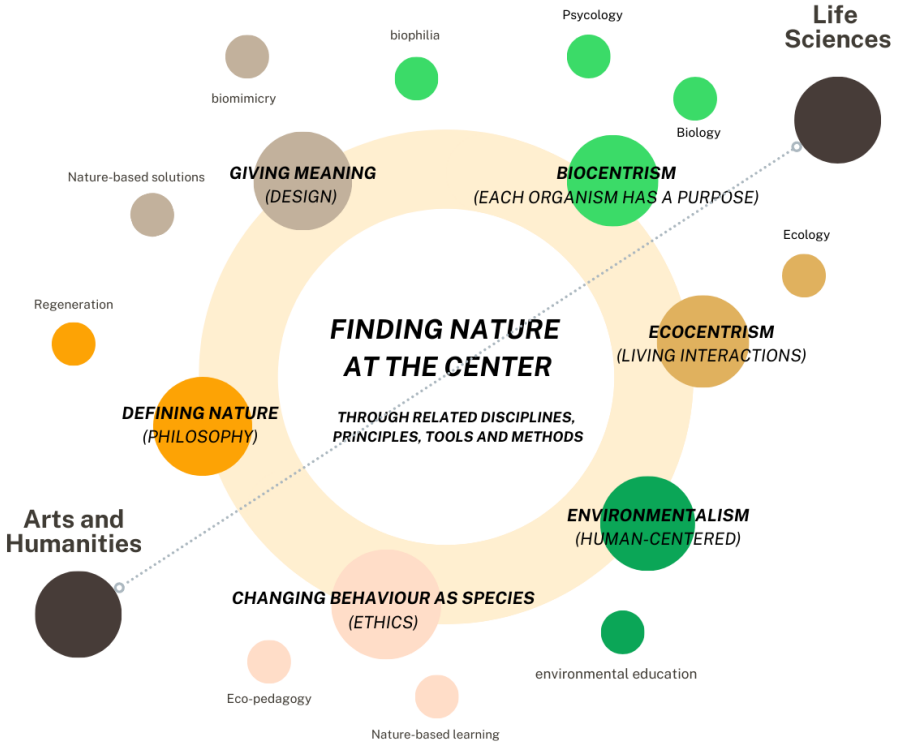

Figure.1 Finding the Nature at the Center Framework

The workshop aims outlined below provided structure and narrative to be explored:

- To understand how as individuals and as a collective we are capable of figuring out: How nature and all its beings are our immediate sources of meaningful and truthful design.
- To recognize an alternative way of design education by identifying concepts, syllabus structure or practices that can help us to co-design with nature.

The methodology used to analyse and integrate information was through a mixed methods technique (Leavy, 2017). The workshop was developed in 90 minutes. The first 45 minutes was exploratory and the following 45 more integrative. The first set of activities were individual and then in groups. The facilitator prepared visual presentations and templates to interact through writing reflections.

The time table was organised in two parts and four activities, both developed at the grounds of the gardens and the education centre. Here the sequence:

Part 1. Ways of Nature-Centred design

Activity 1. Finding our centre. (20 minutes)

Activity 2. Mapping-nature based concepts (25 minutes)

Part 2: Learning to co-design with nature:

Activity 3. Creating a syllabus through walking at the botanic garden (20 minutes)

Activity 4. Defining Nature-Centre Design (25 minutes)

3.1 Ways of Nature-Centred Design (Part 1)

This first stage of the workshop situated the audience to find and discuss if we as academics approached Nature-Centred Design with different terminologies and connotations and validate or construct a better definition. The following activities were developed:

Activity 1. Finding our centre, served as an introduction and provided an initial icebreaker dialog with all the participants on the ontological aspects of centredness. The following topics were discussed:

- Defining Nature (philosophy) The question "How can we define nature?" triggered the dialogue.
- Changing behaviour as species (ethics). The question "What kind of actions are we doing to behave as nature?" disclose a myriad of topics, such as the SDG´s or ecological design.
- Exploring our role / giving meaning (design). "As designers, what is our real role in this world?" was expressed.
- Ecocentrism (ethical claim, living interaction). Discussing ecology and its contribution to the discipline.
- Biocentrism (each organism has a purpose). Life-centered responses to express the dynamics of nature were disclosed.
- Environmentalism (human-centred/anthropocene). Empathy and arrogance revealed a need for decentralisation, decolonization, degrowth and deconstruction

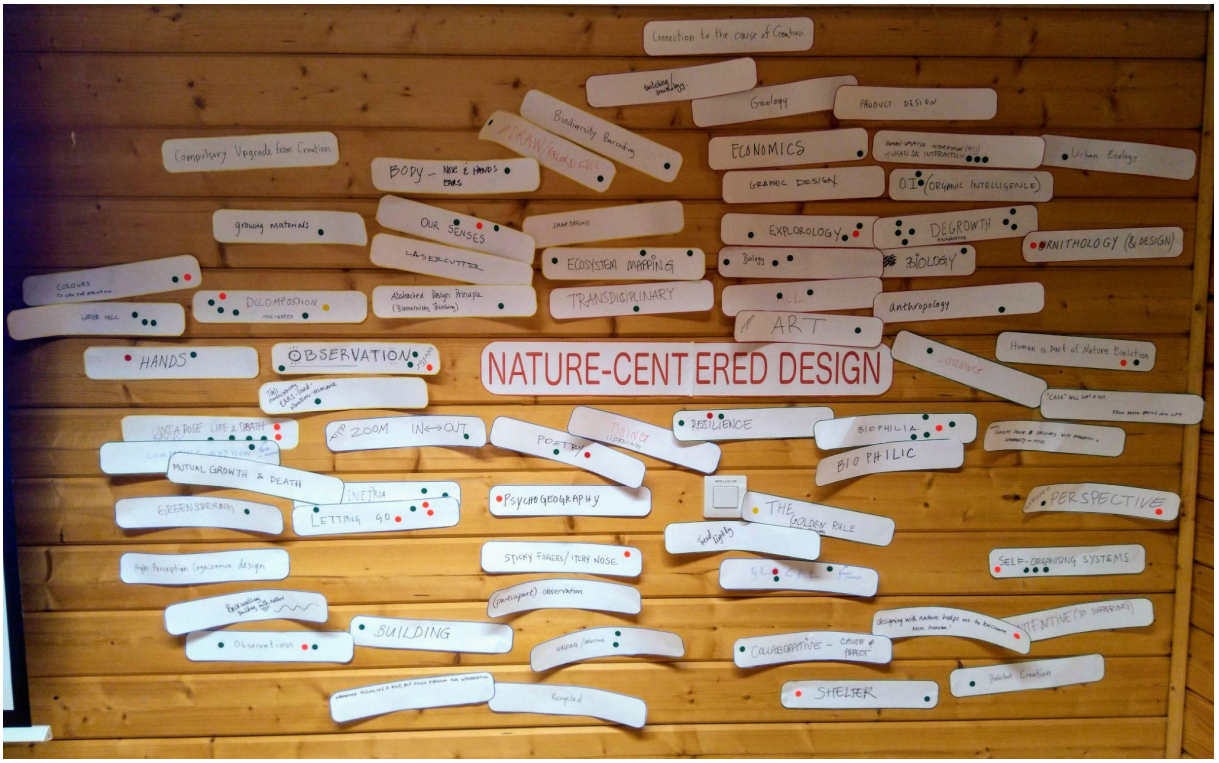

Figure 2. Live word cloud on the wall with coloured sticker dots and written concepts. Credit. the author

Activity 2. Mapping nature-based concepts, was through an introductory approach presenting the most used principles, tools, methods,disciplines and interrelated topics. Ecological Design Principles (Todd, 2006) and definitions of disciplines such as biomimicry and biophilia (Kellert, 2016) were given as initial examples to find more. Colour labels, markers and colour dot stickers were provided to the participants to create a live word cloud (See Figure2). Participants were instructed to write down depending on the following colours: discipline (red), method (blue), tool (yellow) and other (black)

If a participant found a repeated concept and affirmed they were marked with a colour dot sticker with the same colour, use a colour dot to emphasise concept or word. More than one word was

observed in some cases. The results were filtered by colour and the number of dots amplified the word. The concepts were grouped, listed and reported after the workshop. No colour black was observed. (See figure 3).

Figure 3. Word clouds grouped by colour and highlighted chosen concepts. Credit: the author

3.2 Learning to co-design with-in Nature – Part 2

This second stage of the workshop situated the audience to find and discuss if we as academics approached Nature-Centred Design with different terminologies and connotations and validate or construct a better definition. Two experiential activities were implemented:

Activity 3. Creating a syllabus through walking at the botanic garden, was an activity to reflect on the use of outdoor spaces to educate about the experiential factor of Nature. The participants were instructed with the following steps as they walk during 15 minutes:

1. Sense: Write down or take pictures of what do you Observe or feel
2. Collect: Exploring with a magnifier and pick something
3. Move: Walk and do some movements related (yoga, taichi, running or just breath)
4. Draw: Stand for a minute and draw a plant or animal
5. Build: Use materials found in the gardens and create something when you return.
6. Record: Take at least 4 pictures or a video
7. Do your own action: What else do you want to do?

During this activity the participants experienced different spaces, interacted with plants and collected seeds, branches, feathers etc. During 20 minutes we discussed what they experienced and created arrangements on a table (See Figure 4). An open discussion was followed with the questions: What can you teach the students when you are outdoors in Nature? What kind of terminology and language? What types of learning activities can you design?, which gave room for the last activity.

Figure 4. Series of images of participants at the botanical garden and samples of their creations. Credit. The author.

Activity 4. Defining Nature-Centre Design, was the closing activity in which deeper reflections and conclusions came in a participatory way. For this activity a circular template and a pen was provided. They have to look at the word cloud from activity 2 and observe the creations they did on the table to write down a definition or doodle to represent Nature-Centred Design (See Figure 5). The following definitions were written:

- A biophilic and biologic approach to the creation of new product/service systems that are inspired by ecosystems in order to improve human interactions, livelihood and quality of life.
- Seamless integration of the build and the natural world.
- Design process and decisions guided by what we benefit from the natural world to ultimately renourish the environment.
- Interdisciplinary research and making that helps us to work with nature and become more human.
- A shift from force and anthropocentric, Nature-centeredness is respectful, alternative and evolving acknowledging the complexity and that we don´t know what we don´t know. We are a part of nature as humans but as equal as other living species.
- Sow seeds to cultivate and nourish, cross-pollinate, decompose and evolve.
- Design that finds solutions that support ALL living organisms to thrive...design that goes beyond human-centred design. Ahimsa = non-harming
- Working with the cycles of life and death, growth and decay, processes of becoming and unbecoming.
- Forgetting pre-conceptions. A circular network.
- Listening, responding, reflecting to nature to inform process, thought and practice (sense of self)
- Design harmonizes man-made design and nature in order to protect and improve the natural world.
- Grow your own bicycle
- Re-connecting people. A meaningful bridge between nature and humanity.

- Process that stays in harmony with ourselves and everything that surrounds us (symbiosis, balance, care, growth, one with nature, mutualism.
- An experience....too complex for words.
- The process of creating with the minimal interference to Nature, anything that enhances the overall return from the planet to creation, with what it invested in us.

Figure 5. Collection of Nature-Centred definitions. Circular templates with text an ilustrations. Credit. The author.

3. Finding meaning by centering nature

3.1 Disciplines

It seems interesting that in the word cloud the word DEGROWTH as discipline appeared. Following with BIOLOGY and EXPLOROLOGY, which means that we might need more content on these topics to be implemented at the design academy. Recently it seems that Biodesign (Grushkin, 2022) and material ecology (Oxman et al., 2020; Scarpitti & Valsecchi, 2023)is growing and many schools around the world.

Degrowth has also been approached in terms of regeneration, low-tech(Watson et al., 2019) and fighting climate change (Green, 2020; Rocha, 2022). In this way activism and climate change approaches aligned with some ODS goals require the implementation to become responsible companies and schools.

Conventional economic growth must be challenged reinterpreting progress and wellbeing. Designers can become advocates for a planned contraction of consumption and production. Teaching to reduce impact, increase equity and improve the health of humans and non-humans requires a change of mindset to reshape our current economic system and look for principles such as sharing (Howard, 2015), abundance (McDonough & Braungart, 2013) and

conviviality(Hinchliffe & Whatmore, 2008) over profit and unmeasured growth. The alternative provided to *design for degrowth* is a clear prioritisation of planetary well-being.

3.2 Tools

DECAY and DECOMPOSITION were the tools most voted. We can conclude that a way to stop our way of designing and creating technologies for the world needs this kind of action. Incorporating the living in all creation represents a new typology of processing matter and energy. It also represents a behavioural mechanism for our society. Decay by design again appears to be into the biodesign realm (Ling, 2018) and related circular design(Mestre & Cooper, 2017; Moreno et al., 2016) tools. Life-cycles need to move beyond material but into patterns of consumption permeating in service-systems and ecosystem services(Bullock et al., 2011; Speak et al., 2015) that we seek to restore.

Decay is an essential part of the life cycle of living organisms, as it allows nutrients to be recycled and reused by other organisms. Designing taking into account the processes of microorganisms, such as bacteria and fungi, or caring for water cycles, carbon emissions and mineral extraction is currently approached through circular economy systems (Andersen et al., 2022; Robinson, 2022) where resources are kept through recycling processes, repairing services and reusing materials and components. A *circular design economy* has been widely adopted by businesses and governments as a means of reducing environmental impact, improving resource efficiency and creating economic value.

3.3 Ethics

In terms of finding methods for Nature-Centered Design the word LETTING GO and INERTIA are connected with the meaning of RESISTANCE. We need a kind of ethical know-how to create or not to create. This kind of design activism requires systemic design approaches(Jones & Kijima, 2018) and transition design(Kossoff & Irwin, 2021), elements that in the last decades are increasingly implemented as strategic design but also a change of mindset in society. Also the necessity of interbeing (Anderson & Guyas, 2012; Lim, 2019) to reach the interaction with other life forms to respect their time and spaces of living also approaches such resistance. A massive change in structuring design academies on ethics is required.

Some of the key ethical considerations in art and design disciplines are, representation, appropriation, intellectual property, social responsibility and sustainability policies (Russ, 2018). Another aspect that is urgent to integrate to design ethics is the notion of interbeing, a concept that emphasises the interconnectedness of all phenomena in the universe (Hanh, 2003). In the context of human ecology highlights the interdependence considering our design actions have a profound impact on the life of other-than-human beings and of course human societies.

We are not isolated individuals but rather part of a larger web of relationships and social systems. Our actions and decisions have an impact not only on ourselves but also on those around us and on the wider community. In essence, interbeing highlights the need for a holistic and integrated approach to human ecology that recognizes the interconnectedness of all beings. Overall, ethics in art and design involves a commitment to creating work that is respectful, responsible, and promotes positive values and behaviours.

3.4 Principles

There were two main principles. Accepting our BIOPHILIA as a key principle for our development as humans and the communion with the other-than-human world. SELF-ORGANIZE as nature

principle is a way to centre us and interact with nature and its dynamic patterns.
Self-organization in nature also refers to the emergence of complex patterns or behaviours from the interactions of natural systems, such as ecosystems, cellular networks, and weather patterns (Alexander, 2019; Ball, 2016; Kisak, 2016). Self-organization allows for efficient adaptation and resilience, as the system can respond to changes in its environment without relying on a centralised control mechanism. How can we implement resilience through design?

The more we live in concrete and glass cities the more we need the living nature dynamics around us. There are initiatives regarding mental and physical health, and even spirituality (Arvay & PhD, 2018; Jaszczak et al., 2020; Kolandai et al., 2023) connected to integrate biophilic design.Knowing the ways of living of plants, animals and other living things such as mountain landscapes and living rivers are reaching an important milestone in embracing the rights of nature and going beyond conservation and restoration (Alley, 2019; Louv, 2012). Responding to natural dynamics in every aspect of our life is a way not only of connecting with nature but transforming our consciousness, our symbiotic consciousness.

3.5 Significance

By analysing all the definitions in terms of similarities it was found that an overall definition needs to question how to BECOME MORE HUMAN, by NOURISHING and RESPONDING to what we call Nature. Designing should return to its original significance which is to bring MEANING in all that is created. Healing our planet must be implicit and verified in everything we create, from genetic manipulation to the most sophisticated skyscraper or space rocket. All creation means meaning and in that meaning is where cultural behaviour change happens. If nature reveals meaning and consciousness (Maturana et al., 1992) then, what are the requirements to respond to nature?

The notion of becoming human involves both biological and cultural factors, as well as individual experiences and environmental influences (Abram, 2011; Tomasello, 2019; Wellmon, 2010). Maturana and Varela's theory of autopoiesis proposes that living systems organization is based on a network of processes that continuously regenerate the components of the system. The theory has had a significant impact on biology, cognitive science, and philosophy, and has been applied to fields such as artificial intelligence and organizational theory (Capra & Luisi, 2014; Luisi, 2003). Encouraging the individual designer for self-reflection we can identify areas to further develop, and can take steps to improve ourselves and seek to find a centre in nature. Seeking out new experiences that involve immersive meditational or therapeutic practices in natural space (Hansen et al., 2017; Linden & Grut, 2002) provide great benefits to understand our role and nature´s laguague.. These kinds of practices are not fully implemented in design academies and organisations.

Biologically, humans are distinguished from other living organisms by their complex language abilities, and capacity for abstract creativity. These features result from millions of years of evolution through the sophisticated ways of beliefs, values, and social norms define our collective identity. Developing a sense of self-awareness, empathy, and ultimately co-evolution through designing will enable us to navigate the complexities of becoming nature.

4. Conclusions and Feedback

The goal of the workshop was to explore a definition of Nature-Centered Design. We achieved this goal by discussing, walking at the botanic garden grounds, participating in the word cloud and writing a definition. Although the workshop was short, it was very visual and experiential helping the participants to think and be critical. After the conclusion the participants were asked

to evaluate the workshop and sent sentences of what worked and what did not. One of the main comments was the need of more time to reflect and also that the venue was a bit far but worth travelling there from the conference venue.

Another goal of this workshop was to create this kind of report to keep the conversation going. At the end of the workshop and during brief conversations a creation of a nature-centered design interest group or a conference to create a publication was discussed. There are many experts, like the participants, who were exploring concepts such as: multispecies design, biophilic design, regenerative design, biomimicry and symbiotic design etc. We then can consider these notions as making a strong contribution beyond the definitions of sustainability and reinforcing the way of the design ethos.

Nevertheless there have been enormous advancements from the design academy and from the natural and social sciences to incorporate deeper notions and methods to contribute to nature's interactions and systems. For example, Van Horn et al (2021) expresses how the recognition of nonhuman personhood, the symbiotic relationship with our living planet and the care when addressing kinship through our language can help us to go beyond interpretations, insights or entertainment but to seek a 'relational exchange'. Notions such as Life-Centred Design have also been exploring looking for responsible innovations and advocating non-human stakeholders(Borthwick et al., 2022) and moving beyond the anthropocene notion to the symbiocene(Albrecht, 2019).

We can conclude that there is not just a trend but vital affirmation that we as species will continue to express what we want to become along with a more-than-human world and seeking an interbeing practice through design. Going beyond human centeredness, places us in a deep philosophical and ethical position to become holistic, inclusive, caring and emphatic. The need to keep the dialogue, establish new routes to co-design with nature is urgent and the design academy has a big responsibility.

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About the Authors:

Author 1. David Sanchez Ruano. PhD in Design (University of Dundee), Master in Industrial Design (UNAM, Mexico), member of the National System of Researchers (CONAHCYT). Member of the International Network on Biomimicry. Leader of the Research Group: Advanced Design Processes for Sustainable Transformation.

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