Eco and Positive Design in the XXI century: a research note

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Decreasing the ecological footprint is not a fashion trend; it is a personal and collective need and a duty for each person. In order to recognise contributions to fulfil this very special task, this works present a contribution to unravel what links Ecodesign with Positive Design in this research note. It is based on nineteen scientific documents selected from thorough research. It is possible to understand the evolution of both concepts and the possible paths adopted for the Design of today and the future. The theories are synthesised in a table with information gathered from the articles: author, year, the perspective of the analysis of the concepts, or their definition.

Keywords

Design;
Ecodesign;
Positive Design;
Sustainable Design;
Sustainability.

Introduction

Designers constantly question what people's needs are. Meeting human needs is the starting point of people-centred designing processes (World Bank, 2014). Design is the meeting place between the human and the real (Moura, 2011); in this sense, it tries to interpret those needs as imposed by the environment. People are really looking for solutions to a problem, and Design can contribute to individuals' happiness and their subjective wellbeing.

The role of Design as a strategic resource goes beyond the corporate sector. Contemporary problems associated with (...) environmental issues (...) demand new solutions and unconventional approaches, and Design is increasingly being seen as an agent of positive change (Muratovski, 2010). That is why Design is now recognised as an important factor that could contribute to sustainability (Muratovski, 2017 p. 6).

Today, Design is a system instead of a product is the right approach for supplying market solutions according to environmental constraints (Astropekakis, 2008). Using Waldemar Januszczak's analogy in the Sculpture Diaries about Art and Land Art, Strategic Design, and System Design is much more than what Design is about. Sistem Design deals with big ideas; it deals with the whole. It became a strategic asset since it is central to the new requests of society and most companies face the imperative to use it to react to change and competitive pressure (Muratovski, 2017).

These 'new' achievements of Design, according to Muratovski (2017), are the creation of systems and the implementation of new experiences and strategies. Together, systems, experiences and strategies are building new concepts of Design for sustainability and Design approaches such as Ecodesign. The sustainable wellbeing Design system aims to build a model of a dynamic environment centred on people (Bakar et al., 2017). This focus allows designers to understand simulta-

neously human and environmental behavior and needs and confront it with Ecodesign demands; it is clear that Design has ceased to be task-oriented to 'product creation' and became a 'process creation' of environmental studies to develop new problem-solving skills based on a "cross-disciplinary model of Design practice that brings together (a) multidisciplinary, (b) interdisciplinary, and (c) transdisciplinary ways of working" (Muratovski, 2012, p. 46; Muratovski, 2017 p. 11).

The openness to various branches of knowledge and the establishment of different lifelong connections provided different terms with similar meanings. They can be found in the literature as Green Design, Sustainable Design, and Environment Design, among others. However, as Cahn refers (2006), Ecodesign offers a more systemic concept since it addresses the Product Life Cycle (PLC), detecting and preventing or reducing the environmental footprint throughout the process.

According to Desmet & Pohlmeyer (2013), Positive Design is a broad term that links all design forms, research, and intentions. Its' main goal is to increase people's subjective wellbeing and the enduring appreciation of human life — for example, Design for pleasure, Design for personal significance, and Design for virtue. The Positive Design intends that people reach their full potential, giving individuals a sense of meaning in their life and greater life satisfaction (Seligman et al., 2005), a state of mind linked with the sense of flourishing in line with the Aristotelian tradition (Ryan & Deci, 2001).

This work aims to answer the following questions: what links exist between the issues raised by Positive Design with the premise of building a more sustainable world? Is human happiness linked to preserving the environmental world as we know it today? How can Ecodesign contribute to the individual's happiness and subjective wellbeing?

Establishing touchpoints between Ecodesign and Positive Design requires analysing the factors studied in both fields. The method adopted is to conduct a systematic review of the literature of scientific works published in specialised journals that integrate both Eco and Positive Design concepts. Current research in sustainable development and wellbeing shows that the sustainable behaviors in "Ecodesign" and "Positive Design" complement each other. However, scholars ought to present more explicitly how wellbeing relates to sustainability (Kjell, 2011). Cahn (2006) states that the links between Ecodesign and other approaches require testing to prove they are linked and how.

Muratovski (2013) in the chapter 'Sustainable consumption: luxury branding as a catalyst for social change' establishes that wellbeing and self-fulfilment can

generally be achieved more easily if sustainable, conscious consumption becomes a socially elected lifestyle by consumers targeted by luxury products and brands. Sustainable products are this way, seen by the author as inducing a status-driven consumption, stimulating the desire to buy and use them.

The present approach also focuses on Kjell (2011) and Schäfer and Löwer (2021), who call for more research in this area.

Methodology

The present paper includes a literature search carried out through the search engine Google Scholar using the keywords "Ecodesign" and "Positive Design" simultaneously. This method served to identify relevant literature and focus on available articles. Books and quotes, as well as seven articles, were discarded. Table 1 presents the studied authors and publications, the study area and the definitions or perspectives provided on Eco and Positive Design.

Literature review

Ecodesign

The European Commission (2021) defines Ecodesign products as using less energy and resources, presenting lower environmental impacts and risks, and preventing waste generation during the early product Design phase. The main goal of Ecodesign is to offer sustainable products that include ecologic criteriums in all the productive and logistic processes. Also known as Green Design, Ecodesign focuses on creating energy-efficient, healthy, comfortable, flexible use products, and designed for long life (Rifkin, 2008). Ecodesign products also should have a minimal impact on the environment concerning the materials used.

According to Greenpeace (2018), in the last 30 years, the consumption of raw materials increased by 30%. In this era of consumption, different organisations focused on developing and applying new production models that perfect the use of earth's natural resources and energy, including sustainable infrastructures. Ecodesign improves the quality of human life, encouraging people to establish a healthy relationship with their natural environment.

UNO (2019) defines it as fundamental to adopt and deepen the Ecodesign philosophy, creating sustainable products in all the production value chains and doing it using the right production systems at all stages of the process - briefing, materials,

process, production, distribution, consumption, disposal (pollution and waste) or reuse, in order to reduce the impact over the environment and stimulate the use of green energy (Ko, 2020).

From a business point of view, Ecodesign is a strategy that aims to maintain or increase the value of the products within a closed circuit free of residues. This approach to product Design using exclusively sustainable materials allows for redoing, reusing, and recycling products at the end of their life cycle, avoiding the typical waste and disposal of the linear economy based on the buy-use-discard principle (Ko, 2020). The most eco-friendly products adopt green technology, green material, and green manufacturing to improve their green properties (Vieira, 2020).

Ecodesign, consumption and luxury

Designers have a key role in shifting to a sustainable life. The Design followed the evolution of industrial, economic and cultural contexts and is hand-to-hand with innovation and new product development. The Design responded with creative and integrated solutions when environmental issues were raised, even if most companies and economic systems worldwide needed more time to be ready to implement significant strategic changes. In many industries, Design kept products and processes oriented to price and sales, although in several countries, such as Europe and other 1st world economies, environmental regulations became increasingly demanding. Large companies kept the decentralisation of production, exporting to low-wage countries, polluting production and industrial and consumption waste. Such practices caused most of the present social-environmental problems (Vieira, 2020). However, more competitive companies and groups positioned themselves as sustainability-oriented. Examples of Ecodesign cover consumer goods as diverse as Precious Famine table, from Toni Grillo; biodegradable furniture like the Living Object by Philip Henderson; used dishes, taken from the garbage and from the waste recycling chain, as Nature Table Plates by Lou Rota for Anthropologie and Rykrt – Recycled Ceramic Lucy D. Collection; Catherine Hutchins and Aniyo Rahebis' Waste-Free & Edible Coffee Cups; clothes, shoes and rugs made from ocean plastic as Ferreira de Sá Circular Collection manufactured with the ECONYL® Regenerated Nylon and ZOURI that uses plastic trash from the Portuguese coast together with ecologic and sustainable materials (Proctor, 2009).

The European Commission is continuing its efforts to transform the EU into a more resource-efficient, climate-neutral and pollution-free circular economy. They recently regulated 'Ecodesign for sustainable products, to improve EU products' circularity, energy performance and other environmental sustainability aspects (EC, 2022).

The European Commission intends to stimulate and legislate in order to increase the design, production and commercialization of "More environmentally sustainable and circular products".

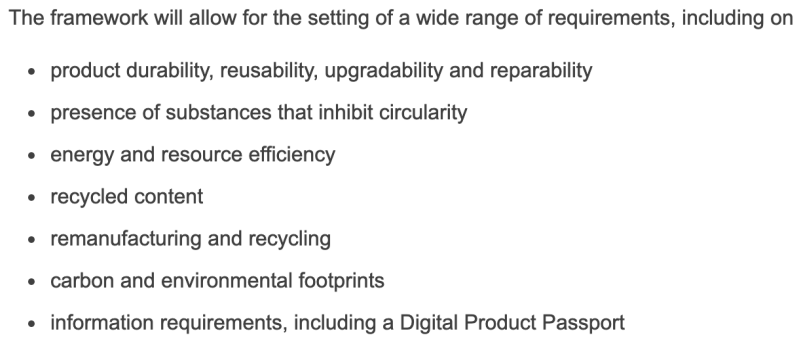

Fig. 1

UE More environmentally sustainable and circular products. Source https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/sustainable-products/ecodesign-sustainable-products_en

As we can see the most important Design features of new sustainable products are (1) the use of less material and energy; (2) enhancing the easy recycling by using materials that are easy to find, reuse, or recycle, for example, promoting the use of biological materials, and more durable ones; (3) Increase products multifunctionality, reuse and recycling; (4) reduce CO2 emissions from products, through the correct use of materials, and transportation; and (5) developing ecological messages in the products (Iberdrola, 2022).

One of the key issues for the success of Ecodesign is to diffuse the desire to adopt eco-friendly products made by environmentally conscious brands. Designers and advertisers understood the need to change consumers' behaviour and instilled in the market the idea that conscious consumption and sustainable products are in, and they offer special status to those who buy and use them. Those products bring a better life and a social image of consciousness affordable only to restricted groups of people. Luxury begins being associated with slow Design, handmade, and cultural products made with organic, handcrafted and local materials and production technics. In other words, the right products for the elite that respects the planet and buys products handmade according to high-quality artisanal standards. Organic or sustainable materials and products are always more expensive than industrial ones, giving status to those who buy and use them. As Stø et al. (2008) and Muratovski (2013) point out, corporations and global brands are using consumer fears about the effects of the environmental and climate crises to sell the idea that what it takes to overcome their negative impact is to buy new sustainable products and services. Images of happy people in healthy environments promote sustainable lifestyles worldwide. Even in fashion, green is the new black (Blanchard, 2008).

Positive Design

> *Design can and must become a way in which young people can participate in changing society (Neste, n.d.).*

Papanek (1971) had an influential effect on academics and professionals in Design. He introduced the concept of Positive Design towards a sustainable future and society (Er, 2009), working positively. He already anticipated a real consumer society would understand a few decades in the future: that buying for the sake of buying and continuously discarding products does not bring anyone happiness or comfort. It has a high negative impact on the environment, penalising everyone globally.

Several authors as Jhally (1998), Thorpe (2010) and Holmes et al. (2012) (as cited in Muratovski, 2013), concluded that what brings people happiness and quality of life is good family relationships, emotional equilibrium, good self-image and esteem, free time to enjoy quality leisure and the company of friends, as well as all the things that can enhance the quality of life. To accumulate material possessions, above all low, durability products, bring consumers more stress than pleasure and induces more problems than it solves. Life becomes a strive for more: more excitement, more beauty, more interesting experiences, in an endless fantasy of itself (Baudrillard, 1986; Eco, 1986; Sanes, 2011 as cited in Muratovski, 2013) that, as Muratovski notes, makes happiness impossible to achieve.

As cited in Muratovski (2013), Xiao and Li (2011) study confirmed that people engaged in conscious consumption and sustainable behaviour presented higher scores of life satisfaction when compared to traditional consumers. They also presented prosocial behavior and considered sustainable products more valuable, so they accepted they were more expensive than traditional ones.

In this perspective, designers could only develop their work with knowledge of defuturing. Without it, they do not understand the consequences of their effort (Fry, 1999), and they play a fundamental role in developing a sustainable society. Since sustainable behaviors can result in positive feelings, the correct work of designers, and the right behavior of consumers, society can reach general subjective wellbeing (Vieira, 2020) with positive psychological consequences to people (Canh, 2006; Vieira, 2020). Also, Corral Verdugo (2012) noted that when people have sustainability in their core values, they develop pro-environment, frugal, altruistic, and fair behaviours, which promotes positive emotions and sustainable practices. Unquestionably, a sustainable society depends on humans and earth resources to be aligned and achieve an adequate co-existence balance (Liu et al., 2020). Design is a transdisciplinary and holistic field in charge of integrating the development of new products and systems, methods and technics to guide societies towards

a sustainable life (Vieira, 2020) while achieving the best for each individual, as well as for all individuals in the same society (Abrantes et al., 2007; Ehrenfeld, 2008).

Positive Design aims to increase the subjective wellbeing of people and society, reducing unsustainable consumerism (Vieira, 2020). To achieve this goal, Design also must stimulate pleasure and emotions in the use of products that must have a personal meaning, bring about wellbeing, and arouse positive emotions (Desmet & Pohlmeyer, 2013; Jordan, 2000; Jimenez et al., 2015). Thus, Positive Design stimulates human flourishing and includes ingredients of Design for pleasure, personal significance, and virtue (Desmet & Pohlmeyer, 2013). In this perspective, Design can stimulate specific human behaviors, developing skills and motivating actions. However, it is underestimated as a source of behavior change, even if it has the potential to improve people's wellbeing and aid in the transition from a consumption economy to a sustainable society (Desmet & Pohlmeyer, 2013).

Terminology

The evolution of the mix of Eco and Positive Design

Astropekakis (2008) wrote an article on packaging sustainability topics, knowing that a large part of the waste is due to packaging.

More than 40% of the oil-derived plastic materials produced are converted into packaging and half of them into food packaging. Ninety-five percent of plastic packaging, however, is lost to the economy after a short cycle of first use and is often discarded in landfills or ends up in the natural environment" (Astropekakis, 2008 in Jäger and Piscicelli, 2020, p. 733).

However, in Astropekakais (2008) work, the link between Ecodesign and Positive Design is very tenuous; he limits himself to using the term Positive Design once and uses it to say that Ecodesign issues are convenient because they bring satisfaction to all stakeholders: designs, companies, consumers, and the environment itself. The author made the first contribution to the idea that contemporary Design and economies were facing new opportunities.

A few years before Goodin et al. (2005), research demonstrated that people with less 'free time' would benefit more from slow Design. The authors' slow Design concept refers to the creation of objects that escape mass production lines and promote the individual's wellbeing, society, and nature. At the same time that Astropekakis calls attention to the impact on the environment and prices from packaging, Hay (2008) makes an important contribution to this discussion, showing

that the awareness of time leads to more sustainability. Hay (2008) also opens an opportunity for designers to make a positive intervention since he warns that consumerism has the effect of alienating people from the intimate connection between what people do and its effect on human and natural systems, requiring a greater focus on the areas of perception, temporality and Design.

Lloveras (2009) argues that product designers should apply scientific discoveries to their work independently from their specific conceptual approach while involved in technical developments. If so, the designer can enhance his product's ability to promote wellbeing since scientific knowledge and technological development are opening significant new opportunities to Design. However, the Design solutions must consider a compromise involving the individual, the group, and the community. Designers must create new and better products with imagination and creativity. However, even if the designer and the Design community, in general, continue to improve classic user-centred Design, they should always take international standards into account but, above all, those that respect sustainability, safety, or health. According to Lloveras's (2009) approach, User Centred Design differs from Positive Design because it is more specific and does not consider the environment. Design must incorporate understanding reality and the policy frameworks that affect it. It can be referred to as global-centred Design or Global Design (G-Design). Nevertheless, this type of Design could create products that are not good for the environment or humanity.

Vera, Melles and Kapoor (2011) do not address Positive Design; they present Human-centered Design, which allows for better serving humanity. They consider it vital that designers and engineers are truly human-centred in their practice, understanding the requirements, functions, and status of the community with which they interact. Also, they must respect the differences among different cultures and human expectations. In this perspective, designers are expected to base their project on social research that, combined with community involvement, allows them to reach a meaningful cultural understanding and higher sensitivity to the value systems of different communities (De Vere et al., 2009). Sustainability and social responsibility are, though, at the forefront of product Design and can, eventually, unleash the experience of Positive Design (De Vere et al., 2011).

Kjell (2011) joins the debate on the new orientation of Design practices and starts that there is a potential synergy between sustainability and wellbeing. The author states that there must be a stronger link between the research of both fields since this connection is desirable as one of the ultimate goals of sustainability research is the pursuit of human happiness and that of future generations. However, he remarks that the integration of wellness and sustainability research is, at best, scarce.

However, to understand Positive Design, it is necessary to understand the positive psychology of sustainability.

Corral-Verdugo (2012) defines Positive Design as directly correlated with a positive psychology of sustainability and establishes its background as capacities, emotions, virtues and strengths. The consequences of Positive Design for the user would be satisfaction, happiness, and psychological wellbeing. Sustainable behaviours produce significant psychological benefits for the individuals who practice them, and psychological wellbeing, one of the pillars of positive psychology, refers to personal updating, subjective wellbeing, individual growth, and fullness. Corral-Verdugo (2012) combines environmental psychology and positive psychology in its facet of sustainability psychology. This combination produces an area of confluence that the author labels as the positive psychology of sustainability.

The focus on sustainable Design as promoting positive social and cultural improvements and a significant impact on individuals' feelings of personal accomplishment and happiness are stressed by Hur et al. (2013) and Desmet and Pohilmeyer (2013). Hur et al. (2013) sustain the importance of promoting consumers' participation at the Design product briefing stage as a potential way of promoting more sustainable consumption. The practices oriented to consumers' involvement in Design represent a shift towards a more holistic view of the creation, consumption, and disposal of product processes; users may develop empathic relationships with products and thus satisfy their psychological needs. Cooperative and transformative Design action could link sustainable consumption and production with the potential to transform Positive Design practices.

In turn, Desmet and Pohilmeyer (2013) note that people are changing. Their focus moved from material to more personal values, and this perspective is aligned with the findings of psychologists examining the conditions for human flourishing (Seligman, 2011). Personal resources are not what makes a person happy but how they are exploited. This idea of material wealth as a source of happiness opens a distinct perspective for Design, given that consumer products are also resources. What makes people happy is not the material value of things but what it is possible to do with them that can bring happiness. The relevant question is not whether products contribute to happiness but how they do it. Desmet and Pohilmeyer (2013) defined their approach to Design for happiness linking feelings of personal accomplishment and happiness with the resulting concepts of Design research of several authors, such as Design for experience (Hassenzahl, 2010), Design for human capabilities (Oosterlaken, 2013), Design for socially constructive behaviour (Tromp, 2013), Design for social innovation (Manzini, 2007), and Design for well-being (Keinonen, Vaajakallio, & Honkonen, 2013). Even if changing in focus and

theoretical foundations, these concepts use Positive Design as an umbrella term for all forms of Design, Design research, and Design intention.

It is necessary to conceptualise the human character and develop a psychological consumer typology since Design works for and with people. Boon et al. (2015) define Design for sustainable behaviour as linked to exploring behaviour psychology. They consider that different fields of psychology may be of interest to the development of future Design research areas: for example, personality psychology, moral psychology, and positive psychology. Currently, the authors consider that, from a psychological perspective, sustainability-focused individuals present two types of behaviours: sustainable behaviour and good life behaviour. In the first case, they reduce their consumption values to the social and environmental impacts of products. In the second one, people want to benefit from consuming sustainable products and having a good life. In this case, only recently, Positive Design has been able to answer that double challenge.

Conclusions and outlook

Design is an especially important tool for organisations, and it influences the behaviour of consumers and their relationship with products, brands, and companies. Although designers are constantly asking what people need (World Bank, 2014), today, the correct approach to Design is to build dynamic models that consider the environment but whose centre is people (Bakar et al., 2017) and the relationship between two recent tendencies, the Eco and Positive Design (Cahn, 2006).

Several grounded contributions to Design literature made in recent years, as presented in Table 1, allowed us to understand the trends of the evolution of Design concepts in recent years from Ecodesign to Positive Design. Ecodesign is a trend well set up in the scientific community, in governments and in organisations, and it is easy to find organisations, designers, and products that follow this concept.

After Ecodesign concepts diffusion, Positive Design developed its' perspectives as complementary to sustainability trends and revealed to respond synergistically to present society's challenges. With it, Design work began to include terms such as defuturing challenges, sustainable society, sustainable behaviour, and wellbeing, among others. The centre of Design moved from the needs of individuals to those of society in general, the relationships between them, the resources nature has to offer, and the Design itself. Positive Design became synonymous with Design as a multidisciplinary science but focused on employing methods and techniques to create products and solutions compatible with the development of sustainable life,

that is, those that can best meet the needs of the individuals and the society and its environment. Positive Design seems similar to sustainable Design, except for focusing on the main purpose of human life: the pursuit of happiness. Positive Design solutions are synonymous with pleasure, personal means, virtue, the stimulus of human positive solutions behaviour, and motivation for personal improvement. It aims to support human behaviour change, improve people's wellbeing, and contribute to sustainability as the path to future wellbeing. Since Astropekakis (2008) studies, Ecodesign became more connected to Positive Design, which continues its evolutive tendency to find the best answer to the question of how to ally consumption with sustainable wellbeing.

Authors	**Article title**	***Definition or Perspective***		**Study area**
		Ecodesign	Positive Design	
Racicot and Pezeshki, 2007	Active assessment in engineering design using a systems approach	A major challenge for faculty is developing a "culture of evidence" in the classroom that supports student-centred formative learning and aligns with program and accreditation goals. Another challenge is the development of assessment tools that lighten, rather than add to, faculty workload."		Engineering Design, Education, Capstone Design Course, Students External Partnerships
Hay, 2008	Slow design and the lost art of shifting gears	The issues that design answers are changing. Slow design produces more adaptable methodologies that aim to make it more durable and sustainable. That is, slow design creates products that stay in function for a more prolonged time and value energy throughout the product's life cycle. Hay (2008, p. 17) says, "slow design is not necessarily about more time but rather the strategic redistribution of time and energy together".	Mindful Designer is a part of Slow Design as far as networking and relationship building is part of the method of slow design (Hay, 2008).	Slow Design, Mindful Design
Astropekakis, 2008	An Overview of packaging sustainability topics	Ecodesign is the process of designing products and product-systems that decrease ecological impacts throughout the total product lifecycle (Astropekakis, 2008). Designing a system instead of a product is the right approach for providing solutions to consumers' problems because a system is a complete solution with many lifecycles. The understanding of the "all" shows new options: refill options, packaging reuse solutions and different disposal options. The material is the most critical item to alleviate environmental issues and promote efficient Ecodesign, paying attention to the first stages of material extraction and concluding with the end-life scenarios to create an ecological sequence.	When consumers reuse a package is an environmentally positive design strategy. Its increasing return value is no longer seen as garbage and passes to the original processing input, a new life cycle. Ecodesign issues are helpful, as they bring satisfaction; this is Positive Design to all participants: projects, businesses, consumers and the environment.	Packaging Sustainability
Lloveras, 2009	Beyond user-centred design	This work mentioned the evolution of environmental design methods, such as Life Cycle Analysis, ecodesign and sustainable design. He named them global-centred design or global design (G-Design); international-centred design, or international design; respectful design; or secure design" (Lloveras, 2009).	Lloveras discussed the evolution of some user-focused design methods, such as (...) Psychological techniques had been developed to capture the deepest desires and emotions of the individual users of products to improve them.	User-centred design

Table 1
Authors contribution to Ecodesign and Positive Design

Malya, 2009	Sustainable product design education: an international review	Malya defends the main environmental design philosophies through the analysis of Bhamra and Lofthouse (2007): while Green Design focuses on single issues, in Ecodesign, the environmental issues are in each stage of the design process. He also defines design for Sustainability is a design that considers the environmental as well as the social impact of the product itself. Malya refers to the Okala Guide (2009), which was designed to provide convenient guidance to designers through The Industrial Designers Society of America (IDSA). The "Ecodesign Section" created in 2001 transformed the Budd Stienhilber ecological committee started in 1989 and gave more than 3,300 members worldwide access to practical tools for designers considering factors such as ecology and sustainability. Even today, it is possible to find countless entries on Ecodesign on the IDSA website, from which the topic stands out: Ecodesign: The Next Challenges (IDSA, 2021).	Malya (2009) considers that designers who have the power to create the goods we all use have a significant impact on sustainability. "Design has both the guilt in the situation today as serving for the industry and the needs of the capitalist system as a profitable contradiction to the goods ignoring the effects of them mostly, but also it has the enormous power on the change of the conditions to help the world to get protected by changing the consumption behaviors to become more sustainable" (Malya, 2009). Environmental issues form a central element to this design programmer creating the opportunity to practice design that enables 'good' enterprises to grow and flourish. Sustainability in the design, manufacture, usage and eventual disposal of products is becoming a legal and ethical requirement in the 21st-century industry. This programmer aims to reflect these issues within a design framework.	Design Education
Vere, Melles and Kapoor, 2011	An ethical stance: Engineering curricula	This work emphasises that is imperative that communities could access basic essential elements of life: clean drinking water, energy, sanitation, healthcare, education, and the tools for self-determination. It is essential to balance social awareness and environmental and cultural sensitivity. The engineering education curricula should integrate the principles of sustainable design and socially responsible design throughout the learning process, at the same time, must keep their focus on the 'design for need'. Also, the product design engineering curriculum must integrate sustainability and socially responsible design to foster culturally sensitive and appropriate design and develop a socially responsible design ethic.	This work does not address Positive Design; it just presents Human-centered Design, which allows for better serving humanity. It is vital that 'next' engineers are truly human-centred in their design practice, understanding their community's requirements, functions, and status and respecting the different nuances of behaviour and expectations. Social research combined with community involvement helps meaningful cultural understanding and the understanding of their value systems, which may eventually unleash the experience of Positive Design.	Engineering Education
Kjell, 2011	Sustainable well-being: A potential synergy	This work addresses the definitional vagueness of sustainability and charges the complexity and subjectivity of the values embedded within sustainability. Thus, sustainability is not depicted as a fixed state but as a balanced adaptive change process in a multidimensional complex integrated system. Sustainability has numerous contradictions and tensions; for example, between aims such as growth,	Sustainable wellbeing: A potential synergy between The wellbeing approach is a comprehensive empirical, evolutionary, cross-cultural, and self-conceptual process that shows individuals' interdependencies with other people and with Nature.	Sustainable wellbeing

		reduction, or equilibrium, or individual versus collective interests. Sustainability aims to develop balanced, interdisciplinary, and value-based processes. The positioning of wellbeing within the sustainability framework can enhance the role of sustainability. Sustainability entails the development that meets the needs of the present without compromising the ability of future generations.	In design, sustainability must stop being a goal to become a starting point.	
Naime, Ashton and Hupffer, 2012	Do Design ao Ecodesign: Pequena História, Conceitos e Princípios	"Ecodesign seeks, objectively, to look for raw materials that are recyclable or to use materials that are reusable, already available by developing products in such a way that mixtures of materials do not prevent future reuse" (Naime, Ashton & Hupffer 2012, p. 1512). The work associates Ecodesign with the use of materials and residues from the manufacture of products or the use of the disposal of products and unused stays. The use of waste and leftovers is also considered the reuse and recycling of materials. Both are essential topics of ecodesign understanding, but the main issue is bringing feasibility studies for reuse to the phases before the disposal of materials. Ecodesign has two ways: one inspired by ecological motivation or as a design that concerns the reintroduction of materials to new product life cycles.	The author emphasises that individuals cannot neglect the fundamental premise that the ultimate purpose of our life on earth is to achieve maximum happiness, which implies harmony, and sustainability within a comprehensive holistic vision.	Ecodesign
Verdugo, 2012	The positive psychology of sustainability	Sustainable practices are universal and have value because they are ideals to meet and reproduce. Like this, they are positive behaviours.	This work refers to studies where positive psychological antecedents (capacities, emotions, virtues, and strengths), and positive psychological consequences (satisfaction, psychological wellbeing, and happiness) of sustainable behaviour are significant determinants of pro-environmental actions. Psychological wellbeing refers to personal updating, subjective wellbeing, individual growth and fullness; this psychological wellbeing is one of the pillars of Positive Psychology.	Positive psychology of sustainability
Hur, Beverley and Cassidy, 2013	Development of an ideation toolkit supporting sustainable fashion design and consumption	There is a strong negative perception of the textile and clothing industries. They are one of the most unsustainable modern industries because they generate significant environmental, and social impacts, throughout all phases of the product's life cycle. The work defines a new concept of social innovation design, the Co-design. It covers existing concepts such as participatory, collaborative, social, and transformation design.	The study defines the design of something positive and describes six design patterns. For example: The empowerment patterns, the persuasion patterns, the interaction patterns, and the Optimisation patterns seek ways to maximise the positive impact of products and systems by intervening in the clothing lifecycle and hence changing the degree of flexibility of design.	Fashion design, Fashion design consumption

Martins, 2013	Design social em Portugal: a perspetiva humana do produto	Martins analyses and clarifies the differences between Greem Design, Eco Design and Sustainable Design. Eco Design is a level above Green Design regarding applying environmental protection measures. Eco Design is a greener practice than Green Design because while Eco Design focuses on the entire life of the product (Useful and non-useful life - from creation to disposal), green design tends to focus on only one part of the product's life cycle.	Social Design has characteristics of ethical, moral, and philanthropic content. The author identifies John Ruskin and William Morris as the first authors to incorporate a more responsible design for and with the user.	Design Social
Silva, 2013	Design para assistência humanitária. A situação dos refugiados e das deslocações internas	Design is on the border between creation and destruction. Designers could mitigate environmental degradation more than economists, politicians, entrepreneurs and environmentalists. The author refers to the concept of EcoBio-Design, for which EcoBio-Innovation is a new paradigm of future Industrial Design (Secca Ruivo, 2008). This concept focuses on the Research and Development (R&D) process based on a method based on two dimensions of Nature: the concept of Ecological Design, focusing on the conservation of Nature (including Ecodesign, Design for Sustainability, Symbiotic Design and Technological Innovation in Design), and in the concept of Bio Design, as a project reference (encompassing Bionic Design, Biodesign and Symbiotic Design).	Society needs a positive design that politicians do not dare to do, nor are they able to do. Design for humanitarian aid.	Design for humanitarian aid.
Desmet, and Pohilmeyer, 2013	Positive Design: An Introduction to Design for Subjective Wellbeing		The work is centred on how design can contribute to the happiness of individuals and their subjective wellbeing. It includes a framework for Positive Design with three main components of subjective wellbeing: pleasure, personal significance, and virtue.	Positive Design
Tucker, Abbasi, Thorpe, Ostwald, and Williams, 2014	Enhancing and assessing group and team learning in architecture and related design contexts	Focused on architecture and design teaching in teamwork. This report ends up addressing sustainability curricula issues.	The work develops a literature review about what constitutes effective teamwork, what contributes to effectiveness in teams, what leads to positive design outcomes, and what leads to effective learning in teams. The review encompassed a range of contexts: from work teams in corporate settings to professional design teams to education outside of and within the design disciplines. The review informed a theoretical framework for understanding what factors impact the effectiveness of student design teams. Although these working groups have been thought of and, in a way, designed for success does not mean that Positive Design has been applied here.	Architecture and Design Education Assessing

			The report implements positive experiences in the involvement of students in teamwork or group work.	
Boon, Wever and Quist, 2015	Beyond behaviour change: Technological artefacts and characterological development	This article describes the potential of design interventions to bring characterological changes towards good living within ecological environment.	Authors identify Positive Design as an emerging field outside the domain of Design for Sustainability known as 'Design Positive'. They analyse it through the optics of Pohimeyer (2013) and appoint it to flourish. Also, characterological development design can be an extension of Positive Design, aiming at the good life within ecological means by cultivating environmental virtue.	Theoretical
Papalambros, 2015	Design science: why, what and how	The second major movement in design pertains to Nature, and thus I will call it `natural design.' The natural design movement also has two paradigms within it. The first paradigm of natural design is quite well established: it views all designed products as parts of living, natural systems. It puts the environment at the centre of the design process. This paradigm is known variously as ecological, environmental, or sustainable design, or sometimes simply as ecodesign. As concerns about the health of the environment become increasingly critical and urgent, this paradigm is radically transforming design practice.		Theoretical
Bakar, Osman, Ibrahim and Abdullah, 2015	Sustainable Wellbeing Subjective Indicators: Human Interdependencies with other Humans and with the Environment	Environmental and human psychology could help understand the interrelations between humans and the environment to be more people-centric. The human dynamics interactions are complex networks.	This study evaluated the current theories and approaches to wellbeing and sustainability to discover the dimensions and factors that influence Malaysia's sustainable wellbeing.	Sustainable Wellbeing
Ku, 2020	Modeling an Innovative Green Design Method for Sustainable Products	The work defines different dimensions of green design, embracing economics, society, industry, ecology, profit, consumer, trade, equality, and sustainability. It includes an innovative method to generate ideas, combining the extension method and the TRIZ theory (Livotov, 2017) to develop a new green design method. Authors agree with (Ku, 2020) because they consider that good product must be green products in the future when the true power of green design can exist worldwide.		Green Design
Schäfer, and Löwer, 2021	Ecodesign—A Review of Reviews	The work supplies a review of the ecodesign field of research to novice researchers. Authors considered that there are several names for similar concepts, with Ecodesign being the most popular. It has evolved from 'end of line' pollution prevention to a more systemic concept and addresses the entire life cycle.		Ecodesign

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