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Expanding Orders of Design and its Implications for Design Education

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ABSTRACT
In the twentieth century, design was mostly about shaping objects and materializing human needs and desires. Industrial design discipline, which was born after the industrial revolution, was characterized as an applied art and applied science aimed at improving the aesthetics, ergonomics, functionality, and usability of a product. Technological developments and increasing complexity of socio-economic problems in the twenty-first century have transformed the design understanding and expanded the field of 'product' design. In this article, the main factors and influencers of this transformation are summarized. Taxonomies exist in the design literature which systematically illustrate the expanding field of design disciplines is presented. As an outcome of this comprehensive literature review, The Orders of Design Education (ODE) framework which is designed to guide industrial design education has been shared. This new approach could be used as a practical tool for exploring or evaluating the curricula in product design programs. Furthermore, it offers a systemic description of the broad areas in design and therefore helps students and instructors alike to discover new horizons for design education.

Keywords: Industrial design, Education, Fourth order design, expanding field, classification, taxonomy

1. INTRODUCTION

Even with the most cursory review of the recent literature, one can easily see that the scope of the design discipline is getting broader, and both design practice and theory are going through a radical change. In the early part of the twentieth century, industrial design had an enormous effect in driving consumption to stimulate the economy and soften the transition to modernism in the aftermath of the industrial revolution (Fry, 2012, p. 14). When Industrial design education first began to take shape with growing industrialization, design students were trained with the necessary skills of that era. The rise of industrial manufacture, changing consumption patterns of the newly urbanized society, and advances in scientific knowledge and technology were the main factors that generated the discipline. By means of its professional skill set, designers were able to materialize human needs and desires, acting as agents between industry and the market to assist growth economy and consumption.

In the 21st century, however, our problems have become much more complex, interconnected and vital. Without labouring the point, climate change, decreasing biodiversity and natural resources, and economic inequality are just a few of the 21st century's 'wicked problems', for which industrial design continues to be an important catalyser. In 1972, Victor Papanek made this statement in his activist book Design for the Real World "There are professions more harmful than industrial design, but only a very few of them". However, without doubt the main concern today is for other professions and responsibility is now more widely spread. A fundamental change at every level of our society has been needed for transitioning towards more sustainable futures. It calls for

new approaches based upon a deep understanding of how to design for change and transition within complex systems (Irwin, 2011). The prevalent Bauhaus lineage design education in this sense remains myopic in addressing these complex problems with its modernist, linear, canonical and mechanistic logical structure. A holistic, systematic and community-based design approach is needed to integrate multifaceted- social, economic, political, cultural- transitions.

The objective of this paper is to explain the evolution of the design discipline and its effect on design education. It argues that we need a new educational framework to assist future designers to find their ways and roles amid the ambiguity of the 21st century's complex problems and act responsibly for sustainable change. The four orders of design, a framework presented by Richard Buchanan (1998), is proposed as a heuristic device for investigating the shifting debate on design in the contemporary period. This is then combined with other similar ordering frameworks in design literature in order to provide an integrated Orders of Design Education framework. This new approach could be used as a diagnostic or exploratory tool for analysing curricula in product design programs, as well as constituting single design projects. Having the ability to observe the transitions in the design field in a systematic and comparative way, it should also nourish future educational reforms. It is hoped that the Orders of Design Education framework constructed through this research will be a guideline for design instructors to evaluate levels of design maturity in different grades. It can also help students to realize different aspects of design- other than beautiful form making for boosting industrial profit- and make them more aware of their roles in society.

2. EXPANDING FIELD OF DESIGN

Use of the word 'expanded' has become mainstream in many intellectual discussions to describe the evolution of a discipline beyond its conventional context such as in, 'expanded literature', 'expanded sculpture', 'expanded architecture' and 'expanded design'. Advances in technology and the complex nature of social problems in the 21st century have expanded the use of the design process beyond its traditional borders. What we design, how we design, and why we design have dramatically changed. The internet, telecommunications, computer and wireless devices have opened up new design possibilities (Moritz 2005). Similarly, the emerging 'internet of things' is creating new opportunities for designers to combine the design of the physical and digital in new ways (Yee, Jefferies & Tan, 2013, p. 6). This brings along with it new types of products from unexpected sources.

Contemporary design follows a trajectory of increasing abstractness, migrating from the design of objects to the design of services, identities, interfaces, networks, projects, and discourses (Krippendorff, 2006). This immaterial turn in the field is in parallel with increasing environmental consciousness and awareness of the need for sustainability over the last century. Design theorist Tony Fry explains this relation in stating that 'Past designers of the present are those designers of today who are still designing according to a model of design practice and a conception of design objects grounded in continuing the materiality of structural unsustainability' (Fry, 2012, p. 14). He claims that the primary objective of design practice should not be the production of object-things, but rather a form of elimination and reduction. The future of design is not object-thing focused but process centred. This entails a paradigm shift in what used to be known as the product of design activity.

In addition to what we are designing, this evolution is also shifting the role of the designers, who are 'having to evolve from being the individual authors of objects, or buildings, to being facilitators of change among large group of people' (Thackara, 2006, p. 7). As designers' awareness of complex social problems has increased, they have had to develop new strategies to work as part of a larger system. Instead of being the central planner of single design projects, they have become 'connectors and facilitators, quality producers, visualizers and visionaries...' (Manzini, 2009, p. 11) of co-design projects. Designers and non-designers work together in these co-design teams, which requires transdisciplinary

skills. These changes in what is being designed and how the design process is conducted have broadened the design field and given rise to a proliferation of new design related sub-disciplines such as product service system design, interaction design, systemic design, co-design, design for policy, transition design and design for social innovation.

Scientific and practical dialogue has actively sought new design methods to enable the integrated sustainability of social, environmental and economic systems at multiple scales and dimensions (Haymaker, 2011, p. 89). Design methods also partook in these changes, advancing to more meta-design approaches. This progress has been portrayed by Bousbaci as three generations of design methods (2008, 38). Peter Jones added the fourth (generative) generation to his description and illustrated the four generations of design methods as shown in Table 1 (2014, p. 6).

Table 1. Four generation of design methods (Jones, 2014)

Generation:	**First**	**Second**	**Third**	**Fourth**
Philosophy	Rational 1960s	Pragmatic 1970s	Phenomenological 1980s	Generative 2000s
Methods	Movement from craft to standardized methods	Instrumentality, Methods customized to context	Design research and stakeholder methods Design cognition	Generative, empathic & transdisciplinary
Authors & Trends	Simon, Fuller Design Science Planning	Rittel, Jones Wicked problems Evolution Sciences	Archer, Norman User-centered Design, Participatory Design	Dubberly,Sanders Generative Design, Service Design
Systems influences	Sciences, Systems engineering	Natural systems, Hard systems	System dynamics, Social systems, Soft systems	Complexity

Based on these developments, the World Design Organization (WDO) has revised the definition of industrial design. The first definition in 1959 was primarily focused on the technical knowledge of designers 'to determine the materials, mechanisms, shape, colour, surface finishes and decoration of objects which are reproduced in quantity by industrial processes.' (WDO, n.d.) The definition in 1969 included the user and the relationships within the production system; though still with the emphasis on the formal qualities of the artefact and the industry. The latest definition of industrial design, unveiled in 2015, is more process focused and covers new design practices. The definition is as follows:

"Industrial Design is a strategic problem-solving process that drives innovation, builds business success, and leads to a better quality of life through innovative products, systems, services, and experiences." (WDO, n.d.) (Emphasis mine).

Today the changing nature of design practice and the role of design within a widening domain indicate that the survival of design as a profession depends less on traditional design education and more on responding strategically to contemporary changes, influenced by ethical and environmental issues as well as technological advancements (Cassim, 2013, p. 190). There is a need for more inclusive design programs introducing and integrating the full breadth of these new developments and values in the field and enabling novice designers to act responsibly in the current catastrophic environment. For this purpose, students should firstly gain the ability to evaluate design problems within a network and to be able to see them from different angles and distances. As in the 8 minute short film Powers of Ten (Full name: Powers of Ten and the Relative Size of Things in the Universe) created by Charles and Ray Eames (Eames Office, n.d.), zooming in to the smallest details of any creation and zooming out to gauge its overall impact on life on Earth, enlightens designers and broadens their perspective on creativity. This film is a good example of how our perception of design problems may alter with different scales- from

an infinitesimal to a cosmic perspective. 'To understand the changing meaning of product in design and the consequent problems and issues of design practice, design education, and design research…' Buchanan suggests four orders of design as places of discovery (2001, p. 10).

3. FOUR ORDERS OF DESIGN AND RELATED FRAMEWORKS

There are various ways of comprehending the expanded field of design. One of the most popular and practical ways is to frame design areas so they can be categorized into different orders such as ladders or nested mappings. These frameworks differ from each other in terms of their aims and areas of use. The most well-known one is Buchanan's fourth-order design matrix which is presented and described in several articles (1992, 1998, 2001, 2008, and 2019). In his matrix, Buchanan assorts design into four broad areas, namely communication (signs & images), construction (physical objects), strategic planning (processes & services) and systemic integration (systems & environment). The proposition behind this matrix identifies 'natural abilities of designers', and indicates where they can become operative and effective in practice. The four orders represent the broad areas in which design is explored in the twentieth century; they are areas where designers continue to focus and reinvent their professions to meet new opportunities and circumstances (Buchanan, 1998).

The first order of design focuses on symbolic and visual communications. It includes the traditional work of graphic design, illustration, computer drawings, communicative sides of material objects, rhetorical aspects of form and semantic expressions. The second order is the design of material objects. Designing and fabricating the physical artefacts, everyday products are the main concerns of this order. The third one is the design of activities and organized services, which includes management, strategic planning, experience, service design, and interaction design. There is a shift from 'thing' foci to 'action' foci. Material objects and communication in the first two orders get reviewed as to how they function in different contexts and how they may advance or disrupt the flow of activities. The fourth order focuses on the design of complex systems or environments where the first three orders of communication, construction and action take place. 'This area is more and more concerned with exploring the role of design in sustaining, developing, and integrating human beings into broader ecological and cultural environments, shaping these environments when desirable and possible or adapting to them when necessary….'(Buchanan, 1992). Consciousness, thought and values that express the unity of the bigger system are essential in the designing process. Instead of following the strict orders of a client project brief within a purely pragmatic and rational way, the designer interrogates problems from a phenomenological perspective. Design and research take shape around a central theme- a vision instead of a single object or an already given idea of fact. Designers working in the fourth order often regard themselves as facilitators. They work in collaboration with experts from different disciplines and other actors around the project in order to make more holistic analyses and to deal with complex tasks.

These orders can be read in different ways. There is an evident historicity in their tendency to outline the 'lineage of design's past and present, as well as point to where design is headed in the future' (Buchanan 1992, p. 10). There is scale in it too; while it can literally mean the size of the product itself; it can also mean the impact of design on society. They can also represent the different sub-disciplines of design- graphic designers with communication, industrial designers with material objects, design managers and service designers with activities and services, and architects and urban planners with systems and environments. No matter how they are interpreted, it would be insufficient to see these orders as simple categories of objects. None of these areas is isolated from the others; on the contrary, they are interconnected without any priority and nested within a bigger whole. Design disciplines of communication and construction do not disappear in the strategic planning and systemic integration, they morph into new expressions and services within an integrated context.

Moving between four orders of design is defined as changing placements by Buchanan. When applied to the wicked design problems, these replacements help in the discovery of new ideas and possibilities in a given situation. 'The inventiveness of the designer lies in a natural or cultivated and artful ability to return to those placements and apply them to a new situation, discovering aspects of the situation that affect the final design.'(1992, p. 13).

Ordering systems are not new or specific to our design territory; indeed, complexity scales have a deep historical root and numerous types of applications in different subject areas. The first examples of classification appeared in western philosophy with the studies of Plato, subsequently improved by Aristotle as in the 'Great Chain of Being' (In Latin: scala naturae, Ladder of Being) where he classifies all matter and living beings in a hierarchical order. Today, similar complexity scales are utilized in many areas such as cognitive sciences, biology, technology, marketing, and educational sciences. In the design field, there are also many other ordering systems following similar logic and principles as in Buchanan's fourth order design matrix. They are used in private and public sectors, design education, sustainability studies to evaluate the maturity of design in different contexts and to propose roadmaps for the future developments. These ordering frameworks are listed in Table 2.

Table 2. Four Orders of Design and other related frameworks

Name	Author	Year	1st Order	2nd Order	3rd Order	4th Order
Levels of Design	John Chris Jones	1970	Components	Products	Systems	Communities
Four Orders of Design	Richard Buchanan	1992	Communication (signs& Images)	Construction (things)	Strategic Planning (process& services)	Systemic Integration (systems& environment)
Widening Domain for Design	Tony Golsby Smith	1996	Words/ Image	Object	Strategic Design Planning	Culture& System
Spectrum of Design Interventions	M.P. Ranjan	1998	Skill-led Design (tactical)	Market-led Design (Elaborative)	Patent-led Design (Creative)	Vision-led Design (strategic)
Next D Geographies	VanPatter& Elizabeth Pastor	2005	Traditional Design	Product/ Service Design	Organizational Transformation Design	Social Transformation Design
Orders in Design Management:						
Design Ladder	Danish Design Center	2001	No Design	Design as Styling	Design as Process	Design as Strategy
Design Management Staircase	Gert L. Kootstra	2009	No Design Management	Design Management as Project	Design Management as Process	Design Management as Culture
Public Sector Design Ladder	SEE	2013	_	Design for Discrete Problems	Design as Capability	Design for Policy
Design Pathways	Winterhouse Symposium	2013	_	Project	System	Culture
Orders in Sustainability Studies:						
Multi-Level Perspective	Frank W. Geels	2002	_	Technological Niches	Socio-Technical Regimes	Socio-Technical Landscapes
Multi-Level Design Model	Peter Joore, Han Brezet	2015	Product Technology System	Product Service System	Socio-technical System	Societal System
Evolutionary Framework for DfS	Fabrizio Ceschin, Idil Gaziulusoy	2016	Product Innovation Level	PSS Innovation Level	Spatio-Social Innovation Level	Socio-Technical System Innovation Level

The first example of complexity scales in design literature is the levels of design presented by John Chris Jones in 1970. In his pioneer design methods book, Jones states that; 'clearly we need multi-professional designers and planners whose intuitive leaps are informed by knowledge and experience of change at all levels from community action to component design.' (Jones, 1970, p. 42). This is a farsighted call, indicating the necessity of inclusive and interdisciplinary design education, which is still valid today. Tony Golsby Smith's article builds ideas upon Buchanan's four orders. He emphasizes the widening domain for design, and states that whether it is a communication or a product, designers focus on the 'thing' (1996, p. 5). In the first two orders, the designer has pre-defined boundaries and is seen as a skilled artisan, who gets hired for his/her technical and aesthetic skills. The NextD Leadership Institute also adheres to a version of the orders of design and correspondingly claims that most of the design conferences, design methods, learning programs, and design thinkers focus on the first two levels of designing with mainstream design thinking approaches (Next Design Geographies, 2011). Prof. M.P. Ranjan, on the other hand, as an influential design educator, focuses more on the capabilities and tools a designer needs to possess to be operative at each level. He refines design activity into four different levels- the tactical level (skill-led design), the elaborative level (market-led design), the creative level (patent-led design), and the strategic level (vision-led design) (Ranjan, 1998).

3.1. Orders in Design Management

The frameworks listed so far are mostly structured for theoretical explanation and to frame the areas involved in design intervention. There are also similar frameworks which are practically used as a design management tool for detecting and evaluating the use of design in the public and private sector. They exemplify how the fourth order framework can be used in practice.

The first one is the Design Ladder developed by Danish Design Centre in 2001 to illustrate and rate the level of design integration in Danish Companies (Danish Design Centre, 2015). The Design Ladder has been used as a tool for survey activity. Surveyed companies are put in four level categories, and then follow training programs according to their stages in order to gain the capabilities for climbing up to higher levels of the ladder. Within this period, The Design Ladder provided effective assessment in following how many companies actually moved up the ladder and which tangible design promotions and policies have been effectively implemented by the Danish government.

Benefitting from Danish Design Ladder, Design Management Staircase (DM) was developed in 2009 as part of the ADMIRE (Award for Design Management Innovating and Reinforcing Enterprises) programme. Their aim is to raise awareness of design management, especially among small and medium enterprises across Europe and share the knowledge in this area. This required the evaluation of companies' design management capabilities and a clear conceptual framework, to which end the Design Management Staircase was developed (Koostra, 2009, p. 12).

In a close partnership with Danish Design Centre, Design Wales, and Aalto University, Design Council published a report called Design for Public Good for the European Commission (2013). This publication collates a series of case studies as good practices and methods to enhance the understanding of design for public sector innovation and to encourage EU member countries to adopt design-led innovation strategies for the public sector and policy adjustments. Case studies shared in this report are presented in a standard template and classified within a three-step ladder to picture the effectiveness of outcomes achieved in each project.

The last framework for managing design at different complexity levels is Social Design Pathways. This was developed collectively by social impact design educators at the 2013 Winterhouse Symposium; a matrix that aims to provide clear guidelines to design educators, students and practitioners for mapping out the number of actors and the expertise required while addressing social problems at various scales.

3.2. Orders in Sustainability Studies

Design has a strategic and essential role in sustainability studies. Sustainability as a system property requires a multi-scale and systemic approach rather than goal directed individual optimizations. Since pioneers like Fuller and Papanek introduced environmental considerations to design theory and practice in the mid-twentieth century, design for sustainability (DfS) has evolved progressively from single products to complex systems. Ceschin and Gaziulusoy summarize the evolution of DfS in four different categories (2016). At the Product Innovation Level, DfS approaches focus on technical aspects of sustainability (e.g. Green Design, Eco Design, Biomimicry); at the Product Service System Innovation Level, users are integrated into the design process (e.g. Emotionally Durable Design, Design for Sustainable Behaviour); at the Spatio-Social Innovation Level, resilience of communities becomes more of an issue (e.g. Design for Social Innovation); and at the Socio-Technical Innovation Level, dynamics of socio-technical systems are important (e.g. Design for Social Innovation).

The four levels structuring Ceschin and Gaziulusoy's evaluation matrix are widely inspired by Transition Theory within the field of Sustainable System Innovation. Transition theory focuses on societal sustainable change processes which are triggered by continuous alterations at different levels. These three levels, entitled niches, regimes, and landscapes, resemble the classic distinction between micro-, meso- and macro-level descriptions of societal processes (Jørgensen, 2012). It is often called the multi-level perspective (MLP). Following this, Peter Joore and Hans Brezet developed a framework called Multilevel Design Model by combining MLP and iterative design cycle as a design supporting model.

4. IMPLICATIONS FOR INDUSTRIAL DESIGN EDUCATION

Considering the current changes in the design field and the complexity of contemporary social problems, it is clear that there is a need for new educational models and pedagogical approaches offering more holistic and diverse understanding of how design can intervene in different systems. Design, "especially as it is taught in universities, continues to remain wedded to making things, that is, techne as the know-how of manufacturing finished products" (Tonkinwise, 2003, p. 1). The current design education paradigm originated from the industrial revolution, referring to the division of labour and educating specialist designers. Many design schools still base their basic structures around the principles set out by the Bauhaus (and the Hochschule in Ulm) - studio based teaching, learning through doing, often in workshops, and a practice based research tradition (Valtonen, 2016, p. 2). The primary focus is mostly on teaching the individual craftsmanship skills such as rendering and styling. These skills are necessary for those designers working on physical and one-off product design projects. However, since many of the design problems have become much more complex and abstract, today's designers need a wider skill-set.

Organisations like AIGA and NASAD periodically assess and update information about which competencies are required for industrial designers. At the AIGA Designer 2025 conference, a summary draft document was shared outlining 7 trends which have significance for the future of design (2017). These trends include embracing complexity, being resilient, making sense in the data economy, bridging digital and physical experiences, and taking responsibility for design outcomes. NASAD also shared the essential competencies for industrial designers in their latest report (2017), which involves developing concepts for social and environmental problems, designing service systems and working in transdisciplinary team projects. These competencies and trends indicate that design education needs to be restructured to prepare design students in the light of expanding and shifting definitions of the design discipline.

The ordering frameworks listed in the previous section offer us philosophical and practical reference points for the requisite educational reforms. They are only mental models that are created to summarize the existing contexts where design can be operative and to make them more comprehensible. They do not contain a fixed and definite explanation about the field of design, and are open to change and further developments over time. Based on a

theoretical review of the existing literature in design, and the synthesis of the ordering frameworks listed above, an integrated model– Orders of Design Education (ODE) has been developed. It has the same conceptual background as the previous models, but has been reorganized and customized for contemporary design education. This model differs from others in that it is specifically designed for evaluating and structuring industrial design curricula and educational projects. Therefore, as seen from the Table 3, the first order does not start with 'no design' or 'communication design' but with product centred design education, which is fundamentally prevalent in all industrial design programs.

Table 3. Orders of Design Education (ODE)

Orders of Design Education (ODE):	**1st Order: Product-Centred Design Education**	**2nd Order: Human-Centred Design Education**	**3rd Order: Process-Centred Design Education**	**4th Order: Transition-Centred Design Education**
Project Brief:	Fixed-brief with product framing	Fixed-brief with product/service framing	Open Brief pointing out organizational problems and expectations	Open brief pointing out environmental, and socio-technical problems
Designer's Role:	A skilled artisan	Researchers and developers	Managers, Strategists	Facilitators, catalysts
Starts with:	Creating a product concept	User research	Discovering opportunities and threats	Envisioning and future projection
Learning Modes:	Working alone	Short-term collaborations	Interdisciplinary teamwork	Transdisciplinary co-working
Challenges:	Defined challenges (Technical&Aesthetic)	Defined challenges (User expectations)	Undefined challenges	Undefined challenges
Mastering:	Technical Knowledge (materials, form, mechanisms, colour, surface finishes and decoration of objects)	Hard and Soft Skills (human-centred design, design thinking methods, field and user research…)	Inter-personal skills, management and strategic decision making. Branding, leadership…	Holistic thinking, identifying and mapping problems and opportunities in complex systems. Envisioning future scenarios
Expected Outcomes:	Desirable and functioning product concept	Improved user experiences, Product service systems, Tangible/intangible outcomes.	Novel businesses, branding strategies, Start-ups, entrepreneurship…	Strategic initiatives challenging the existing social-technical paradigms, and designing for a radical change
Project examples:	Designing a lighting unit, tool, furniture, packaging, electronics, etc.	Designing services: ecommerce websites, car renting services, food delivery services, etc.	Improving a start-up business idea, contributing to the business strategies of an existing company, SME…	Design of carbon-free transportation solutions, healthcare processes, solutions for water, food, energy shortages

The first order symbolizes the classical product design education based on the Bauhaus model, where specialist craftsmanship skills are mastered. In the second order, design thinking methods, user research, and intangible service design principles are taught and practised. In the third order, design students learn to go beyond their individual capabilities, collaborate with different disciplines, develop management strategies, build new business models, and develop proposals for socio-technical innovation. In the last order, students learn to address complex social and environmental problems without knowing the outcome of their design beforehand.

Currently, most industrial design departments concentrate on teaching in the first two orders. In order to provide design education at the 3rd and 4th order, the university system and understanding should be re-considered as a whole. Organizing a transdisciplinary study within the scope of university education, specifying actors or making it open to participation, assessment of the project outcomes, and the limitation of necessary spaces and facilities constitute obstacles for introducing these levels to the design students in a realistic manner. Although it can be slow and difficult to formally install these design orders to the departments, some design instructors are already providing a small series of introductions to their students. As Margolin states, "today there is an emerging interest among some design educators in generating new academic programs that cut across different departments or in setting up projects where students from different departments work together.'(2002, p. 30). The recently renewed School of Design in Carnegie Mellon and their Transition Design Program might be an example of these formations.

Orders of Design Education framework has been developed in order to bridge the ever-widening gap between recent changes in the design profession and the slowly adapting design education. When a curriculum is to be renewed at a university, this is usually done with a narrow view of specialist knowledge and research, and in practice most university curricula are never developed on a strategic scale, but tend to evolve one course at a time (Toohey, 2002). In contrast, this framework may be applied for the systemic redesigning of a department's curriculum in its entirety. It can inform design educators about the quality and scope of their lectures and help them to adjust their pedagogical practices with the latest trends in the design field. It can also be used as an assessment tool to facilitate communication and comparison between the different design departments.

5. DISCUSSION

Design students who are sensitive to the problems of our age are looking for ways to make meaningful contributions and discover their roles in society as future designers. When they attempt to develop concepts in traditional product design departments for the higher orders of design, they face problems in getting support and information from the institutions. An Industrial design student who wants to develop a project for sustainable change usually feels lost between the complexity of the subject and the educational project settings without having an interdisciplinary collaboration. In the end, since s/he feels obliged to design an object as a project outcome, s/he often ends up designing superficial and self-contradictory products. Designed concepts often involve various digital/intangible features and simply designed accessories, such as smart wrist straps, headbands, or wireless yoga mats. Classical industrial design educators are at a loss as to how to evaluate these projects which are full of information but seem to lack adequate reference to 'form follows function' teaching. Today, instead of motivating students to add more and more to the stack of products on the internet, offering students alternative paths might help them to find their own personal definitions and understandings of what design can be. With the introduction of different orders of design in a broader context, they will be more aware and self-confident in selecting which area resonates best with them. This improves the quality of their learning by forming meaningful connections. The integrated model of Orders of Design Education presented in this paper may offer a systemic description of the broad areas in design and therefore help students and instructors alike to discover new horizons for design education.

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