

Title

The Entrepreneurial Design Curriculum: Design-based Learning for Knowledge-based Economies

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Abstract

The traditional wisdom in undergraduate design education has been to educate specialists, who then acquire entrepreneurial and leadership skills through professional experience and graduate studies. Although this approach worked very well until recently, it is not as effective in a knowledge economy. Organizations in the 21st century need professionals that bring competencies that are transferable to new situations and readily deployed. If design competencies – such as qualitative thinking, speculation, ideation, prototyping, and specification – are in high demand in economies driven by the creation of innovative ideas, it's because the transferability and efficiency of these competencies regarding innovation is a large competitive advantage in knowledge economies.

However, educators involved with undergraduate education in design are having difficulty transitioning curricula to the demands of knowledge economies, to the point where unchanged undergraduate design programs are becoming outdated. And a glance at the literature indicates that design educators are concentrating on developing master's and Ph.D. programs, giving little attention to re-thinking undergraduate degrees in design. As a result, students are graduating as design specialists with little preparation in terms of assuming leadership positions and dealing with contemporary, ill-understood phenomena and trans-disciplinary challenges. This lack of preparation limits the role that design can play in economies driven by the research and development of innovative ideas. But we can better train undergraduates if design knowledge is integrated into interdisciplinary ways of thinking, giving tomorrow's organizations the type of professionals they need to take entrepreneurial action.

This research project investigates the appropriateness of undergraduate design curriculums in terms of the professional qualifications demanded in the knowledge economy by inquiring: what role should undergraduate design curricula play in regard to educating tomorrow's entrepreneurs? As a way of discussing the question, this investigation aims to search for an optimal structure for integrating design, business, and liberal arts education into one undergraduate curriculum.

Keywords

design knowledge, undergraduate curriculum, education, knowledge economy

1. Design in Education

In the 1990 article entitled “Design Education in Crisis: The Transition from Skills to Knowledge” in *Design Issues*, Jacques Giard characterized the twentieth century as a period in which the importance of manufacturing know-how was displaced by what he called “the knowledge of designing” [1]. By that he meant a holistic understanding of industrial production capabilities and their potential, equally matched by mastery of the techniques needed to translate ideas into execution. Back in 1990, almost 20 years ago, Giard's main concern was that both graduate and undergraduate design programs focused on the hows instead of the whys of designing, because they were still anchored in the fine arts tradition of making objects, a tradition that can be traced back to the Bauhaus.

With the creation of a design curriculum at the Bauhaus in 1919, design became a set of principles and techniques to be learned as part of a university-level education. According to its founder, Walter Gropius [2], neither artists nor craftsmen at that time could respond to the emerging challenges imposed by industrial mass production, such as the need to make consumer goods functional, cheap, and in harmony with mass production. Although the main goal for Gropius was to train new men, capable of bridging idealism with reality by influencing the production of goods in a new industrial era, the replication of the Bauhaus mission in many art schools and universities around the world established design as a self-contained bachelor's degree.

With the proliferation and formalization of design in higher education, the discipline of design started to form an identity in that it established a body of concepts, principles, and techniques; this process is still in progress. In his closing remarks to the conference on design education during the XVIIth World Congress in 1997, Richard Buchanan acknowledged this transformation and predicted that, as a consequence, design would be taught “as a liberal art of contemporary culture” [3]. That's probably the first moment at which design educators entertained the possibility that someone could study design with no intention of being a professional designer, because an education in design could be equivalent to non-vocational degrees such as literature, history, or biology. Buchanan's vision also anticipated that this new positioning of design education would create a healthy tension with the traditional bipolar division of college education between liberal arts and natural sciences, either by adding a third division or re-shaping these two fields through the integration of design knowledge in their disciplines.

As visionary as they sound, these predictions didn't acknowledge another important transformation in undergraduate education that was taking shape while design was emerging as a new type of liberal arts education. Around the last two decades of the twentieth century, universities also experienced the emergence, specialization, and proliferation of professional education disciplines as the main framework for defining the content and curricular structure of a bachelor's degree. This direction in many cases displaced traditional disciplines in the sense that these disciplines ceased to exist as actual degrees and instead became liberal arts requirements or electives in a professionally-oriented curriculum. The industrial design degree is a good example in that the study of art history became part of the liberal arts requirements. While history has continued to exist as a degree, it has also provided specialized courses for professional degrees. Design in this case was at a crossroads between two options: becoming a liberal arts discipline like sociology, history, mathematics, or biology, as indicated by Buchanan, or becoming a professional education discipline like engineering, management, journalism, finance, law, or social services, as envisioned by Gropius.

Distressed by this dualistic point of view, Alain Findeli published an article in *Design Issues* in 2001 entitled "Rethinking Design Education for the 21st Century: Theoretical, Methodological, and Ethical Discussion," which was intended, among other things, to "lay down new foundations for design education" [4]. For Findeli, although previous ventures in design education were valid experiments in terms of mixing art, science, and technology in different configurations to define design as a discipline, none could ever fulfill the main promise of design education – that it be taught as a meta-practice concerned with humanistic values within complex systems. These previous attempts failed, according to Findeli, because they understood and deployed design as a function of "instrumental reason" [5]. Findeli used this concept to criticize design education as a discipline without a purpose, a passive condition in which designers' actions are determined by causes external to their will, therefore subjugating design into an instrument serving the technical needs of other professional practices such as product engineering and marketing. As an alternative, Findeli proposed a design discipline centered on the practice of design as a process, a way of knowing based on processing an intervention. As envisioned by Buchanan, such definition escapes the traditional boundaries of fine arts, liberal arts, science, or professional disciplines and claims design as a unique body of knowledge. In academic terms, design could thus be defined as a Bachelor of Design, a radical departure from its definition as a Bachelor of Fine Arts in Communication Design, Bachelor of Science in Industrial Design, or Bachelor of Arts in Design Studies. While this model never gained much traction in undergraduate design education, it became one of the primary models for envisioning a new breed of masters-level programs in design, an interesting phenomenon awaiting better understanding.

Findeli's ingenuity and loyalty to design principles and values, notwithstanding undergraduate education in design is still a sub-division within traditional domains. Nevertheless, since the creation of a design curriculum at the Bauhaus, design has consolidated its position as a well-respected bachelor's degree in multiple domains such as fine arts, liberal arts, and science; and in graduate levels it continues its expansion with the Master of Design and Ph.D. in Design degrees. However, with the consolidation of market forces, all levels of decision making in any type of organization have become dependent on knowledge of business and commerce, as opposed to industrial capabilities, as the driver of production systems. Disciplines like finance, management, design, engineering, and marketing have

become functions of business, commercial, and service activities despite being self-contained disciplines with their own ethos, practice, language, and body of knowledge. In education, the exponential growth of BBA and MBA programs has added another layer of complexity to the mix of bachelor's degrees. In the way that a Bachelor's of Design is the regrouping and consolidation of multiple disciplines related to design practice and processes – such as artistic techniques, scientific principles, and social theories – to promote humanistic values, a Bachelors of Business Administration is a re-organization of many of these same disciplines, but with the focus on maximizing efficiencies and producing wealth. While the two degrees have distinct goals, they share the service of common disciplines and could be defined as a function of each other.

For the discipline of design, a new set of questions and challenges emerged when it was confronted with the demand of defining its relevance and utility to societies driven by market economies. In terms of design education, two editions of the *Design Management Review*, from Summer 2002 [6] and Summer 2007 [7], present an interesting window for better understanding the development of this new frontier in design. The two editions, published five years apart, investigate the ways in which the disciplines of design and business intersect in education. The 2002 edition provides a critical perspective raising many concerns about the dysfunctional relationship between these two areas. According to Thomas Lockwood [8] – in his article “Design in Business Education: A Square Peg in a Round World?” – in 2002 the state of design knowledge in business education was dismal, because design was perceived as irrelevant to decision making in business. However, he concludes his argument by highlighting the fact that designers were not being taught business, and the consequential awareness and educational gap made it difficult for design and business to collaborate. Five years later, the editor of the Summer 2007 Review, Thomas Walton [9] describes a very different scenario. The articles in this edition highlight many successful initiatives in education, publication, and policy, indicating a very promising future in which design and business work in symbiosis. Nevertheless, Walton's optimism didn't take into account the fact that design was still being perceived as a function of business instead of a new way of doing business. Moreover, all initiatives related to design education, such as courses and programs, focused only on the graduate level, giving little attention to the demands and opportunities in undergraduate design curricula. While these two reviews illustrate the positive transformation regarding how design and business collaborate, they also make evident that undergraduate education in design is still handicapped by a lack of business knowledge in terms of dealing with phenomena influenced by market-driven production systems.

As this selective literature review indicates, in the ninety years since the creation of the Bauhaus, design educators have constantly challenged the definition of design as a discipline, consequently reshaping the mission and vision of design programs. With the advent of the Bauhaus, design emerged as the integration of artistic methods with scientific principles in order to educate a new generation of artists and craftsmen and better train them to infuse humanistic values into industrial production systems. Later, with the incorporation of design into higher education, it became a self-contained discipline as part of the arts and sciences responsible for the production of knowledge, followed by a process of branching out to multiple specializations within the design discipline. Since then, designers have graduated as experts instrumental in the development of new products and communication strategies demanded by market economies. Curiously, while in the professional context the design discipline has been interpreted as a

business function, in education, design and business-related disciplines such as marketing, management, and finance were separated by ideological principles and credit distribution requirements. Consequently, the design, business, and liberal arts disciplines were never combined into one program, despite the clear signals that these disciplines are complementary and dependent on each other in terms of imagining new ways of infusing social and environmental principles within resilient production systems regulated by market economies.

2. Design in Undergraduate Curricula

When advocating for new paradigms in design education, academic leaders and design scholars have focused most of their attention on a new mission and vision for design programs, thus marginalizing the critical role that curriculum planning and development play in educating future designers. Consequently, the goals and values of design education have undergone significant transformations since the beginning of the last century, but most design curricula have maintained their original configurations, going back to the Bauhaus, with only minor adjustments in the distribution of specialized and general education courses. In many ways, design curricula have been defined primarily from ideological points of view, in many cases aligning with disciplines based on ideological principles rather than potential synergies for producing knowledge. The alignment of design and the social sciences and the tension between design and business are two sides of the same example. The reasons for these ideologically-based alignments are unclear and require further investigation, but their consequences are evident through current examples of design programs and degrees.

The multiplicity of degrees in design illustrates this phenomenon and provides some telling samples for analysis and evaluation [10] [11] [12]. For example, the Bachelors of Fine Arts (BFA) curricula in design can be characterized as 75% vocational and 25% general education, thus focusing on design specializations such as product design, communication design, interior design, and fashion design. On the opposite side of the undergraduate degree spectrum, the Bachelors of Art (BA) curricula in design characterizes the discipline of design in terms of a liberal arts education and organizes curricula in opposition to specialization: 75% general education and 25% vocational. A Bachelors of Art in Design Studies is a typical program in this category. In the middle of this spectrum, the Bachelors of Science (BS) positions design as a scientific discipline in which design is a self-contained specialization. A Bachelors of Science in Industrial Design is the most common example in this category, and its curriculum is usually divided into 50% design education and 50% general education. Noteworthy is the fact that design has traditionally disregarded a Bachelors of Business Administration (BBA) as a potential undergraduate degree; this is analogous to the difficulty of imagining the combination of artistic and scientific principles prior to the creation of the Bauhaus.

Despite these variations, students are graduating either as design specialists or generalists with little preparation in terms of assuming leadership positions and dealing with contemporary, ill-understood phenomena and trans-disciplinary challenges in market economies. Moreover, they are not being trained in fundamental principles and techniques such as finance, marketing, and management for intervening in market economies. This lack of

preparation limits the role that design can play in economies driven by the research and development of innovative ideas. To reverse this tendency, more attention should be paid to the analysis of design curricula in terms of “efficiencies” and “appropriateness” regarding how well they prepare future designers for assuming leadership positions. The goal of such assessment is to identify an optimal curriculum structure capable of combining design, business, and liberal arts education. If undergraduates are better trained, and if design knowledge is integrated into interdisciplinary ways of thinking, tomorrow’s organizations will have the type of professionals they need in order to take entrepreneurial action.

3. Undergraduate Design Curricula in Market-Driven Economies

Based on the previous analysis, it is possible to conclude that societies driven by market economies don’t yet have a type of undergraduate design education capable of bridging idealism with today’s reality by influencing the production of novel ideas (innovation) for the sustainability of economical, ecological, and social values. These societies thus find themselves in a situation similar to the one ninety years ago, when Gropius envisioned a new design education that unified artistic and scientific principles with technical expertise. This was done in the name of bridging idealism and 20th century reality by influencing the production of goods in the industrial era.

The fact that the aforementioned undergraduate design education does not exist stems from the fact that neither design specialization programs (BFA) nor design general education programs (BA) provide the appropriate education and training for market-driven economies fueled by innovation. While design specializations provide the appropriate technical expertise for designing goods, this type of education still centers around industrial production systems and manufacturing-based economies, consequently limiting designers’ capacity to contribute to knowledge-based economies. In contrast, while general education programs in design prepare a generalist with concepts and models for understanding market-driven societies, this education, as Findeli asserted, lacks the tools, techniques, and processes necessary for envisioning new models and innovative possibilities, therefore diminishing designers’ influence decision-making processes related to novel concepts and changes based on humanistic values.

Moreover, neither of these type of undergraduate program trains students with enough financial, marketing, and management principles and techniques to augment their design and liberal art educations, because business knowledge is dogmatically defined as a vocational education, traditionally resistant to synergies with other programs. Indeed, the same can be said of most vocational design programs. However, in market-driven production systems, designers must be proficient in business-related principles and techniques, because neither design visionaries nor discipline-based experts alone can respond to the emerging challenges imposed by market-driven societies. These challenges include the need to design innovative concepts and organizations, not just goods, that are both valuable and functional, meaningful and cheap, personalized and mass produced, and ecologically sustainable and human-centered.

4. Leadership by Design

While the opposition of specialization and general education has many merits, it can also cause many problems if two specializations fundamental to each other are separated, or if specialization and general education are fully disconnected. Therefore, when the dynamics of production and consumption in societies change through time, disciplinary knowledge should be re-clustered in order to better confront unprecedented challenges. Design knowledge during the last century had a productive partnership with artistic and engineering knowledge in terms of confronting the challenges imposed by industrial production systems. In the twenty-first century isolation from business knowledge handicaps design in regards to influencing future directions in production systems driven by market forces. If undergraduate programs in design and business administration could be integrated as a new specialization and substantiated through liberal arts education informed by contemporary dilemmas, a new breed of entrepreneurs, leaders, activists, and strategic managers could emerge. Such individuals would be pragmatically and conceptually trained to bring imagination, humanistic values, and idealism to a production system in which market forces have been the dominant driver of innovation and value creation.

In order to train this new type of individual, both design and business need to be understood beyond their trade characteristics; undergraduate curricula is structured such that 75% of the curriculum is allocated to vocational training. Such configuration leaves little room for integrating design into business education and vice versa, supporting the ideology that only interdisciplinary teams can deal with such complexity. BS degrees also have an undergraduate curricular structure that poses difficulties in terms of integrating design and business, because typically 50% of such curricula are dedicated to liberal arts education, and the remaining 50% is not enough to combine design and business education. Consequently, the dominant approach is to provide business education to designers only at a graduate-level program or through professional experience on the job. The main problem with these curricular options is that they are locked into traditional disciplinary boundaries, a legacy of their historical development; they are not adequate responses to contemporary market-driven economies in desperate need of design and business knowledge guided by humanistic and environmental principles. The 21st century is providing the opportunity for new disciplines to emerge, based on re-structuring traditional disciplinary boundaries. One of the most pressing demands is the integration of design and business knowledge into one discipline.

In terms of an undergraduate curriculum, this new discipline would still need to be complemented by a liberal arts education. In order for such a curriculum to exist, a new distribution model of curriculum would be needed. Probably the most balanced distribution would feature around 40% of the curriculum dedicated to learning design competencies, 40% to marketing, management, and finance literacies, and the remaining 20% to liberal arts education with special attention to humanities and environmental studies. Because this new configuration is not applicable to any of the existing degree types, such as BFA, BBA, BA, or BS, a new type of bachelor's degree might be necessary to align with this new structure. Leadership, Entrepreneurship, and Strategic Management are the three main areas of expertise that should be carefully considered as new bachelors degrees if the integration of design, management, marketing, finance, and liberal arts becomes a reality. Such degrees should have an undergraduate

curriculum focused on educating citizens to take leadership, strategic, and/or entrepreneurial action by providing design, technical, ethical, managerial, and financial education to empower innovative ideas that are human and environmentally centered. Students should graduate with the conceptual and technical abilities to design innovative ideas and empower organizations to fulfill their mission. Such education would prepare future leaders to: make logical and ethical decisions based on humanistic values; apply interdisciplinary ways of thinking to engage with trans-disciplinary challenges; lead organizations into ethical, viable, and sustainable business models; and supply knowledge economies with a quickly adaptable and talented work force.

5. Conclusion

Those who still believe that designers should acquire entrepreneurial and leadership skills only through professional experience and graduate studies fail to see how design, business (including management, marketing, and finance), and liberal arts education could be integrated into a new type of undergraduate curriculum. Indeed, these new ways of envisioning bachelor's degrees in design provide future designers the competencies they need in dealing with contemporary, poorly-understood phenomena and trans-disciplinary challenges imposed by contemporary market economies. For design educators, they provide a new direction in terms of transitioning undergraduate design curricula to the demands of knowledge-driven societies. Seen in this light, a revision of the credit distribution and accreditation requirements in business (BBA, BS) and design (BFA, BS, BA) undergraduate degrees might enable new configurations capable of saving unchanged undergraduate design programs from obsolescence.

Since the centennial of the 1919 Bauhaus curriculum is approaching, an excellent way of celebrating would be to mirror its example by creating a new design curriculum capable of bridging idealism and the reality of market economies. This can be accomplished by way of designers' influencing the production of novel ideas (innovation) for the sustainability of economical, ecological, and social values. As Gropius explained in his reflections about the creation of the Bauhaus, "In carrying out this scheme I tried to solve the ticklish problem of combining imaginative design and technical proficiency. That meant finding a new and hitherto non-existent type of collaborator who could be moulded into being equally proficient in both." [13].

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This publication is part of my ongoing research project regarding the role of design in knowledge economies. At Parsons The New School for Design, where I am an Assistant Professor, I have been involved during the last six years in the program of Design and Management. More specifically, I have been tackling the challenge of developing, improving, and revising an undergraduate design education that combines knowledge from the disciplines of design, business, and liberal arts. I would like to acknowledge the importance of the contributions from all my colleagues with whom I have worked in academic committees and informal discussions since 2003. They have provided very insightful comments, suggestions, and critiques during the innumerable meetings and presentations related to the creation of required and elective courses, the review of tracks, course coordination, and multiple other issues revolving around the challenges of creating and perfecting the program of Design and

Management at Parsons. Many of the ideas discussed in this article reflect the influence of these discussions. This article provided me the opportunity to combine these fragmented discussions with my personal research interest and a literature review into a provocative proposal. This proposal is a result of our quest to produce and deliver a new type of undergraduate design program that is better aligned with the demands of knowledge economies.

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