

## **Design Education and Sustainability: Moving Beyond the Industrialization Model**

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### **BIOGRAPHICAL NOTES**

Jacques R. Giard is Professor of Industrial Design in The Design School at Arizona State University (ASU). Before coming to ASU he was director of the School of Industrial Design at Carleton University in Ottawa, Canada. Professor Giard received his undergraduate education in furniture design in Montreal (1969), graduate studies in industrial design (engineering) in Birmingham, UK (1971), and a Ph.D. from Concordia University in Montreal (1987). Before becoming a design educator Professor Giard had extensive professional experience in Canada with various design consultancies and manufacturers. He is the author of *Design FAQs*, a university textbook on basic design and *Designing: A Journey Through Time*. He has had over forty articles and papers published in various journals and magazines in North America and Europe. Professor Giard was national president of the Association of Canadian Industrial Designers and a member of the organizing committee for the ICSID 97 Congress, *The Humane Village*. ICSID is the International Council of Societies of Industrial Design.

Deborah Schneiderman is an Associate Professor of interior design in the School of Art & Design at Pratt Institute, and a registered architect and LEED Accredited Professional. Professor Schneiderman received her BS in Design and Environmental Analysis from Cornell University and her MArch in Architecture from SCI-Arc. Before becoming a design educator, Professor Schneiderman founded deSc architecture/design/research with

a focus in environmentally sustainable design. Her research explores sustainable built environments, the integration of sustainability into the design curriculum, and sustainability and prefabrication. Recent publications include “A Pre- and Post-Evaluation of Integrating Sustainability Curriculum by Inserting Okala Modules Into an Interior Design Materials and Methods Course” in *The International Journal of Sustainability in Higher Education*, the chapter “Integrating Sustainability into Design Curriculum” in *Sustainability at Universities – Opportunities, Challenges and Trends*, ed. Walter Leil Filho, and her book *Inside Prefab: The Ready-made Interior*, published by Princeton Architectural Press.

## **ABSTRACT**

We spend much of our time in the built environment. Consequently, addressing the sustainability of the designed environment along with the education of architects and designers becomes vital. Herewith lies a challenge: the concept of sustainability is a recent phenomenon and does not fit neatly into most existing design curricula. As a result, it appears that design education has two choices: it can add various aspects of sustainability to its current design curricula or launch a post-industrialization model for design education. The former action does not challenge the underpinning premise of industrialization as the economic model of choice; the latter one does.

This paper begins by looking at another watershed moment in design education, a period when the Beaux-Arts model was *de rigueur* in architecture and design but was becoming out of step with the prevailing economic model: industrialization. As we now realize, only a complete reconsideration of design education would be capable of meeting the challenges of the Machine Age.

Contemporary design education is at that same watershed today with sustainability. It is the authors' position that only a complete rethink of design education will allow it to be in step with the conditions imposed by sustainability. They propose several directions that may be more appropriate at a time when rearranging the deck chairs on the Titanic in this post-industrialization world may not be adequate.

## **INTRODUCTION**

Addressing sustainability of the designed environment and, with it, the education of architects and designers is vital because so much of our time is spent in the built environment. In the US, for example, Americans spend as much as ninety percent of their lives inside of buildings, which constitutes a source of indoor pollution because of the many products and materials found within these same buildings.<sup>1</sup>

Architects and designers should therefore be in a position to make a positive difference in the design of the built environment by applying good sustainable practice. In principle, they are making a difference, but only if we assume that good sustainable practice – and education – means adding knowledge about sustainability to an existing design paradigm. Unfortunately, industrialization – the model that underpins a great deal of design practice and education today – is essentially a top-down model based on growth. And as we are now experiencing, growth – especially uncontrolled growth – is not sustainable.

Clearly, we are living in a world of conflicting paradigms. It appears that sustainable design, if it is to be successful, cannot be achieved by merely attaching its principles to the industrialization model, which is not sustainable.<sup>2</sup> In this context, contemporary design education has reached something of a crisis of conscience. However, this is not new. It was at a similar crisis of conscience when the Beaux-Arts style was the reigning design paradigm and industrialization was poking its nose under the tent flap. Then much like now, modifications to an existing educational model could not meet the challenge. Starting with a clean slate may be the only option. Therefore, where do we begin?

## **IT'S DÉJA VU ALL OVER AGAIN**

The present-day challenge of integrating sustainability in design education has a tinge of déjà vu about it. Architecture and design – both practice and education – faced a similar challenge about one hundred years ago. The time was the late nineteenth century, when the Beaux-Arts ethos was the direction of choice in architecture and design. The comfort zone implicit by this tradition was being challenged by industrialization, which was

nothing less than a monumental cultural change affecting people, society, economics, and the environment. It put into question the common standards not only the practice of architecture and design but also how architects and artisans were trained.

Perhaps no building better evokes the design grandeur of Beaux-Art architecture than the Paris opera house designed by Charles Garnier known as Garnier's Opera. Built between 1860 and 1875, it is an exemplar of the visual *tour de force* that typified the style. Its visual exuberance is overwhelming, with its never-ending use of architectonic devices such as columns, friezes, and sculptures. It is as if Charles Garnier had to embellish the building with every possible detail known to architecture, which he did, outside as well as inside the building.

Garnier's Opera House was not alone. Somewhat less exuberant, the Union Station in Washington DC is also an excellent example of Beaux-Arts architecture. It too is a massive collection of known architectural elements albeit elegantly arranged in a balanced and cohesive arrangement.

Beaux-Arts architecture was defined by a school of thought, literally. The Ecole des Beaux-Arts was founded in 1819 following the dissolution in 1793 of the Académie Royale d'Architecture. The school was intended for French students but was visited by students from around the world who spread the style and pedagogical system.<sup>3</sup>

Characteristics of the Beaux-Arts Style included “symmetrical plans, heavily rusticated arched masonry, ashlar stone bases with rusticated stonework, especially on the ground floor and raised basement levels; sculptured figures; a massive and symmetric façade, often with a projecting central pavilion; a monumental attic story; commonly decorated with dentils; enriched entablatures; monumental flights of stairs; classical columns often set in close pairs; banded columns, engaged columns, coupled pilasters; highly decorated pilastered parapets; balconies; sculptured spandrels; decorative brackets; sculptured figures; ornamental details such as cartouches, floral patterns, Greek key designs, ornamental keystones, medallions; elaborately decorated panels, and the like; the roof, commonly a flat or low-pitched, hipped, or a mansard roof; often, domes and rotundas;

rectangular windows symmetrically placed, with lintels overhead; arched dormers, balustraded windows, pedimented windows, or windows with balconets; doors, commonly paneled with a glass-paneled canopy over the primary entry-way, flanked by columns or pilasters; a wrought-iron grille on the exterior side of the entry door".<sup>4</sup> Clearly, Beaux-Arts served as a showcase for both the architect and artisan in an age when exceptional craftsmanship reigned supreme.

The educational foundation that underpinned the education and pedagogy of Beaux-Arts architecture and design was an adherence to the goodness of style imbedded in classical forms, especially the many aspects related to sculpture and the arts. This was clearly not the age of less is more, but more is more.

### **FITTING A ROUND PEG INTO A SQUARE HOLE**

The flamboyance of Beaux-Arts architecture became one of the triggers for design revolutionaries like Adolf Loos, the Austrian architect of the early twentieth century. In a world that was becoming more informed by scientific thought and more industrialized – including the visible presence of the machine – this visual exuberance was both out of place and over the top for Herr Loos. So much so that he considered it a near criminal act, if we are to take his words on the subject literally. As voiced in his now famous 1908 treatise, *Ornament and Crime*, Loos was quite blunt when he wrote that,

Ornament is wasted manpower and therefore wasted health. It has always been like this. But today it also means wasted material, and both mean a waste of capital.

Loos' diatribe was predicated by a moral objection to ornamentation, which in part laid the foundation for both the premise and promise of industrialization. The latter was creating a dramatic upheaval in European society, which was not only evident in areas such as the mass production of goods but also changes at the level of the individual such as the greater ability to travel.

Loos was not alone with this belief. There were others such as the founders of the Deutscher Werkbund, the German association of architects, designers, politicians and manufacturers who placed their finger on the schism when they stated in their manifesto of 1907,

In the wake of an economical and technical development, which can no longer be checked, a great danger has appeared, the danger of estrangement between the accomplishing and the inventing spirit. This danger cannot be concealed, neither can it be banished from the world again so long as industry exists. We must therefore try to bridge the gap that has occurred. This is the great aim of our association.<sup>5</sup>

Clearly, architects and designers of the Beaux-Arts school were doing all that they could to fit a round peg of classical architecture into the square hole of industrialization. And it would not fit! Like icing on a cake, how could the ornamentation of Beaux-Arts co-exist with the inevitable changes deriving from industrialization? The Gare St. Lazare in Paris, although not Beaux-Arts in style, typified this dilemma: its traditional architectural exterior was the ornamental icing to the metal railway 'shed,' which was the cake.

There were still others who acknowledged the round-peg-square-hole dilemma. Chief among these were the leaders who would eventually form the Bauhaus: Walter Gropius, Ludwig Mies van der Rohe, Marcel Breuer, and Johannes Itten. With their intervention, the curriculum for the teaching of art, architecture, and design would never be the same. It would be overhauled and rewritten. In the face of industrialization, tinkering with or modification to the existing Beaux-Arts curriculum would not suffice.

Why the need for such a drastic action? Because industrialization was creating an equally drastic change in society. Consequently, the Beaux-Arts formulation for architecture and design – both practice and education – was out of context. The round peg no longer fit the square hole.

## **IS THE PEG STILL ROUND? IS THE HOLE STILL SQUARE?**

In most respects, design education today fits within the context of industrialization. Not only does it embrace the tenets of rationalism it also provides industries and corporations with yet another tool in their quest for growth. As a result, never have the people of the developed world had so much material wealth.

That said, industrialization – especially its excesses – has created a watershed moment not dissimilar to the Beaux-Arts period in the early twentieth century. As Victor Papanek foresaw in *Design for the Real World* and stated so adroitly, we have arrived at a point in many societies where people are buying things they don't need, with money they don't have, in order to impress people who don't care. As a case in point, can someone please tell me who the Kardashians are, and why I should care?

Today, sustainability is a dominating issue facing design and architecture. Once again we are facing a Loos moment. In many ways and in terms of societal impact, sustainability is really no different from industrialization. It is forcing architects and designers to reconsider their roles as cultural agents: are we part of the problem or part of the solution? Do we lead or do we follow?

There is certainly evidence to show that design practitioners and educators are reading the same gospel but reacting differently to the message. A recent commentary by James P. Cramer, editor of *Design Intelligence*, is rather blunt on this point. In his opinion and with reference to the American design professions, Cramer stated “The critical mass of [design] professionals is still behind the sustainability curve.”<sup>6</sup> This is not comforting news for design educators, who are doing their utmost to *push* sustainability in their curricula.

But pushing a sustainability agenda onto a curriculum based on industrialization is a repetition of the round-peg-square-hole conundrum that was experienced with the Beaux-Arts model. In principle and in practice, it will not work because one model contradicts

the other. Simply stated, sustainable design is the antithesis of the industrialization model, which permeates current design practice and education.

Consequently, how does the peg fit the hole? The industrial or machine ethos changed the design process to the point that it no longer resembled the fundamental premise of Beaux-Arts, the process that preceded it. Given the fact that issues of sustainability are as significant to design today as industrialization was a century ago it is only fair to assume that sustainability will have a similar if not greater impact in the reconsideration of the designing process and, with it, design education.

This being the case, it is inevitable that design imperatives will need to be developed in order to seamlessly integrate sustainability into professional design education.

- Sustainability is a foundation block for the future of the planet. It is not a fad, a fashion, or a trend, but a fundamental condition for survival.
- Moreover, sustainability imposes a significant change to the existing operational model of developed countries, one that is based on industrialization.
- As a result, the integration of sustainability in design education must reflect the nature of a post-industrialization model.
- For design education, the challenges implicit in the integration of sustainability may be too broad to be met by mere adjustments to a design curriculum underpinned by operational principles derived from industrialization.
- Consequently, today's design educators will have to reconsider current principles and practices in design education in a way resembling what the Bauhaus masters did a century ago when they too faced a significant paradigm shift.



- In addition, design educators will need to become proactive in the research aspect of sustainability theory and its applicability to design. Reacting to the research of others is insufficient if sustainability is to be relevant to design education.
- In the end, the integration of sustainability in design education will need to become seamless. It will be the only way to design if design is to be part of the solution.

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<sup>1</sup> U.S. Environmental Protection Agency (2009a) 26 January 2009-last update, 'An introduction to indoor air quality: organic gases (volatile organic compounds – VOCs), <http://www.epa.gov/iaq/voc.html>, accessed June 12, 2011

<sup>2</sup> Some experts claim that the resources of two or three planet Earth would be needed if the world's population were to have the same standard of living as the developed world. Clearly, this proposition is not sustainable.

<sup>3</sup> A Global History of Architecture Mark M. Jarzombek (Author), Vikramaditya Prakash (Author), Francis D. K. Ching (Consultant Editor), 2011, Wiley: Hoboken NJ, pp. 668).

<sup>4</sup> Dictionary of Architecture and Construction, 4<sup>th</sup> edition, 2006, Cyril Harris, McGraw Hill: New York, p. 100.

<sup>5</sup> The quotation appeared in an exhibition of The Werkbund at Carleton University (Canada) in the 1980s.

<sup>6</sup> Cramer, James P., web newsletter from *Design Intelligence Update*, 12 July 2011