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Architecture Manual  
SPRING 2012

*Not Nature*

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# Nature by Design

Ralph Ghoche

Before organic forces and patterns were sublimated into structural and organizational vectors informing architectural design, they were the subject of intense scrutiny by ornamentalists in the nineteenth and early twentieth centuries. Despite the disparaging comments on the excesses of decorative design in *L'Art Décoratif d'Aujourd'hui*, Le Corbusier drew attention to the modern significance of this type of inquiry. Ornamentalists such as Owen Jones, William Morris, and Eugène Grasset, Le Corbusier remarked, looked directly at nature, “a flower in one hand, and the scalpel of a surgeon” in the other, for they were the first to make visible nature’s essential structures and processes.<sup>1</sup> Le Corbusier uncovered an important motivation on the part of nineteenth-century architects: ornament was not a discrete and detached zone of experimentation; its larger stakes resided in transforming architecture as a whole. As Owen Jones explained in the concluding paragraphs of *The Grammar of Ornament*, research on new ornamental forms “would be one of the readiest means of arriving at a new style” of architecture.<sup>2</sup>

In the works of an important faction of nineteenth-century architects, ornament was a special locus of organicist and vitalist disclosure, a conduit for a wholly new and potentially disruptive kind of metaphor. While buildings are, of course, made up of inert and largely inorganic constructive members, ornament provided a rupture in that rigid and seamless fabric, a window into an utterly foreign world of fleshy shoots, coiled fronds, and esurient blooms of all kinds. And the more life-capturing and vitalist the ornament, the more it provoked the ire of the orthodox architectural institutions of the day such as the British Royal Academy and the École des Beaux-Arts. Modeling ornament

from nature was left to smaller and more artistically radical trade schools, the British Government Schools of Design and the École de Dessin in Paris, which cultivated live botanical specimens for this purpose on their premises.

Ornamentalists connected with these institutions delved into the deep structures of plants and produced ornamental motifs that sought to give shape to both the visible geometries of nature and to the invisible principles of growth generating these forms. Even as they drew and modeled the live botanical specimens in front of them, their ornamental compositions did not directly imitate nature but rather aimed to “express” and “conventionalize” it. These transformations of nature were as much a reaction to the classical theories of imitation as they were a response to the reigning positivism of the day and the new means of mechanical reproduction such as Thomas Jordan’s carving machine and the photographic camera. Nor was the design of



The Acanthus, full size, from a Photograph.

Fig. 1 Owen Jones, Illustration from *The Grammar of Ornament*. London: Day and son, 1856, p. 46.

1 Le Corbusier, *L'Art Décoratif d'Aujourd'hui* (1925). Paris: Flammarion, 1996, p. 135.

2 Owen Jones, *The Grammar of Ornament*. London: Day and son, 1856, p. 155. It might be added here that Jones’ desire to transform architecture by decorative means was best achieved at the Crystal Palace. As official architect for Joseph Paxton’s glass and iron structure, Jones attempted to transform the exhibition hall into a sublime natural spectacle by proposing an interior decor that was as simple as it was effective. Using only three primary colors (derived from his study of color theory) judiciously applied to the iron members, Jones transformed the reading of the building by engineering the atmospherics of what was then the largest enclosed space yet built. The final visual effect looking down the immense glassed-in barrel vault Jones described in floral terms as a “neutralized bloom.”

ornament a completely individual and subjective enterprise. In this sense, the transformation of nature into ornamental motifs was nothing like Adolf Loos' later characterization of the dandy artist wantonly composing ornament after a night at the concert hall. In fact, books on ornament were among the most philosophical architectural treatises of their time, drawing from the work of Johann Wolfgang von Goethe, August Wilhelm Schlegel, and Victor Cousin, among many others. Ornamentalists dealt with a question of profound consequence: how to capture the very life pulse of nature; the same animate force that, charges of vivisection notwithstanding, remained elusive even to the anatomist's scalpel.

However divergent from the form of natural specimens, ornamental compositions produced during the nineteenth century were, in a sense, more animate than nature itself. Whatever principles of growth and generation guided the natural world, they remained hidden beyond the incidental deformities and imperfections caused by external forces acting on the individual plant. The ornamentalist interested in disclosing the secrets of plants had to be versed in the botanical and natural sciences in order to discover nature's inner logic. Perhaps the most compelling figure to bring the disciplines of botany and art together (Art Botany, as it was later called) was Christopher Dresser, a graduate of the Government School of Design and recipient of an honorary doctorate from the University of Jena in 1860 for his work on Goethe's morphological theory of plant growth. In a series of early essays published in *The Art Journal* under the uniform title, "Botany, as Adapted to the Arts and Art-Manufacture," Dresser expressed the great principle of the organic world as "the centralization of power, or the exertion of a force in a centrifugal manner from a fixed point, which gives marvelous oneness to the structures of the kingdom."<sup>3</sup> The formulation was crucial to Dresser's analytic diagrams of plant structures in his subsequent book, *Unity and Variety, as Deduced from the Vegetable Kingdom*, and to his ornamental compositions such as the sketch illustrating "Power" in *Principles of Decorative Design* of 1873. In designing the motif, Dresser employed forms from living organisms that best captured the vital life-pulse of nature, such as spring buds, the wing bones of birds, and fins from certain species of fish. Sharp lines of force, some vegetal and others skeletal, radiate from the lower left corner of the image and are accentuated by the unfurling sprigs holding the composition together. It is stunning how the motif seems to at once expand outward and retract back to its natal source, as though acted upon by a force un-rendered. Nature was not imitated or reproduced in these motifs, but summoned and focused in such a way as to elicit in the mind of the viewer the very same vital energies that lay at the heart of the organic world.

<sup>3</sup> Christopher Dresser, "Botany, as Adapted to the Arts and Art-Manufacture." *The Art Journal* 3, 1857, p. 17.

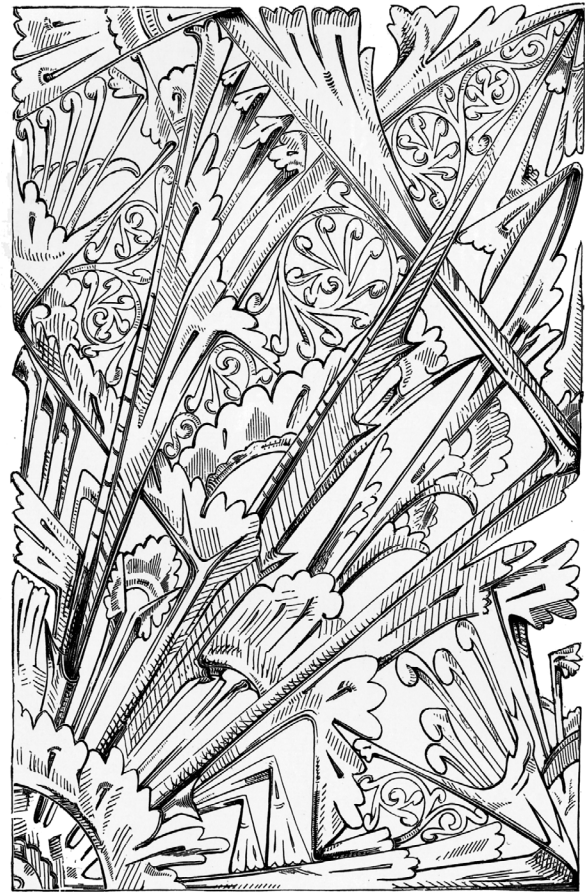


Fig. 2 Christopher Dresser, *Principles of Decorative Design*. London : Cassell, Petter, & Galpin, 1873, fig. 12, representing "Power."

Dresser's characterization of organic life as a force radiating from a fixed point and unfurling centrifugally outwards was very much in the spirit of Goethe's discoveries. In the late eighteenth century, Goethe set himself apart from the prevailing classificatory approaches to nature based on external appearances and searched for inner motives underlying vegetal form. In the short booklet *The Metamorphosis of the Plant* published in 1790, Goethe evoked the image of the *Urpflanze*, an archetypal plant that represented the essential dichotomy at the heart of organic life: the ability for a unified generative force to manifest itself through infinite variation. The question was essentially a philosophical one, and its consequences extended as much to plant form as to artistic creation. Dresser himself had recognized this aspect of Goethe's interest in *urtypes* when he wrote: "The designer's mind must be like the vital force of a plant, ever developing itself into forms of beauty." Literary passages and images connecting the growth of a plant with the unfolding of creative thoughts and dreams

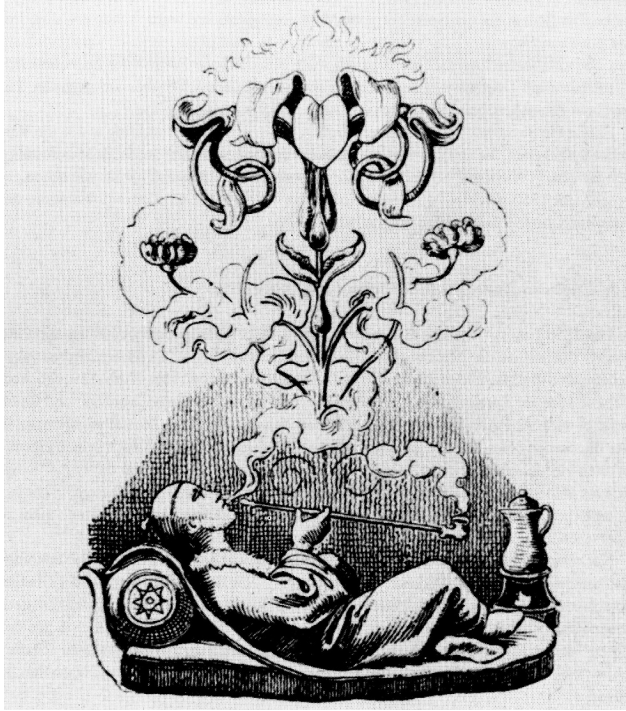


Fig. 3 Moritz von Schwind, *Album für Raucher und Trinker*, 1833.

abound in the nineteenth century, such as Austrian painter Moritz von Schwind's illustration of an opium smoker.<sup>4</sup>

The notion of *unity in variety* promised to hold universal principles for form creation. By the mid-nineteenth century, the English meteorologist and pioneering balloonist James Glaisher published detailed images of snow crystals under a microscope in order to demonstrate that within the six sided template of the snowflake, infinite variation could arise. Within a few years, these images dotted some of the most important architectural treatises of the day, including Gottfried Semper's *Der Stijl*. Architects reinterpreted the history of building along the lines of the *urtype*, arguing that underwriting architectural form throughout the millennia were universal principles that expressed themselves in unendingly diverse ways. Like the plant whose final form was transformed by the environmental conditions around it, architects sought new forms that, while based in universal motives, responded architectonically to the *zeitgeist* of their age. The notion was also extended to the constructional logic of buildings. Following on natural scientist George Cuvier's famous claim that one could reconstruct an entire organism from the fossilized remains of a single bone, architecture too saw itself as a complete system of construction in which the

<sup>4</sup> On the importance of Goethe's *Urpflanze* on artistic creativity in the nineteenth century see Annika Waenerberg, *Urpflanze und Ornament: Pflanzenmorphologische Anregungen in der Kunsttheorie und Kunst von Goethe bis zum Jugendstil*. Helsinki: Finnish Society of Science and Letters, 1992.



Fig. 4 Victor Ruprich-Robert, *Chapiteau*, engraving, from *Flore Ornementale*. Paris: Dunod, 1866, p. 145.

individual variation of its parts contributed to the organic unity of the whole.

These ideas were especially influential in France, where ornamentalists transformed discourses that were internal to the discipline, into outward and overt displays of natural form. During the nineteenth century, no work of ornamental theory commanded the interest and attention of architects and decorative artists as did *Flore Ornementale*. Written by the architect Victor Ruprich-Robert, *Flore* was the result of three decades of teaching at the École de Dessin de Paris (later the École des Arts Décoratifs), a training school for aspiring decorative artists. Unlike Owen Jones' ordering of ornament along historical lines, Ruprich sought a *grammaire* of ornament based on an expansive taxonomy of plant species. In the plates of *Flore* one finds the celery stalk, the papaya plant, the absinthe flower, and the cannabis leaf, to name but a few of the five hundred species represented. In the introduction to the work, Ruprich-Robert urged his readers to develop a new symbolism of natural form that could confront the pervasive historicism of the era and generate a wholly new architectural expression; what elsewhere he had designated as an *art nouveau*. Again, ornament was a critical vehicle in the challenge against the orthodox positions of architectural practice and pedagogy.

Ruprich-Robert drew from Victor Cousin's philosophy of *éclectisme*, which, before the word was disparaged by

the neo-Gothic architects Jean-Baptiste Lassus and Eugène Viollet-le-Duc (the meaning they ascribed to it would be the basis for its modern usage), was centered around the notion that the empiricism and sensualism of Locke and Condillac could be reconciled with the idealism of Kant. Cousin transformed the philosophy of eclecticism into an aesthetic theory that sought to create an active tension between geometrically ordered unity, and spry and vigorous movement and diversity. In keeping with Cousin's position, Ruprich-Robert's architectural work did not "conventionalize" nature into two-dimensional motifs in the manner of the Government Schools of Design in Britain; rather, his ornament unleashed the rounded corpulence of vegetal form in order to reunite the real with the ideal. And his interest in Cousin's method allowed him to combine rigorous inquiry into botanical form with esoteric theories on plant life culled from the work of Arnold Boscowitz on the souls of plants, and perhaps from that of J.J. Grandville on animate flowers<sup>5</sup>. The merging of the scientific and concrete with the spiritualist and transcendental were pivotal elements in Ruprich-Robert's teachings. This facet of his work informed much of *fin-de-siècle* design in France, and also in America, where Louis Sullivan, who attended Ruprich-Robert's courses and redrew images from *Flore*, would reorder plant forms into seemingly infinite matrices of cosmic resonance.<sup>6</sup>

By the end of the century, ornament had nearly consumed architectural form within the contortions of its vitalist pulse. The more tenaciously it transformed the host structure, which, more often than not was composed of the very new, and technologically innovative materials of iron, steel, and plate glass, the more ornament appeared as something of a veil, naturalizing the otherwise alienating products of the newly industrialized world. A half century earlier, Marx and Engels had evoked the German satirical tradition of the *verkehrte Welt* to highlight the absurd phenomenon by which commodities produce desires that are inversely related to their provenance and use. No doubt Surrealists saw ornament in this way. As Salvador Dali implied in his article, "The Terrifying and Comestible Beauty of Fin-de-Siècle Architecture," Art Nouveau and other late nineteenth-century adventures in vegetal decor were successful because they broke the wall of Kantian disinterest and promised to fill a psychological void they could never truly satisfy. Dali concluded the article with the simple maxim: "Beauty shall be edible or it shall not be."<sup>7</sup>

And ingest ornament the avant-garde architects did. For in their work so many of the biological discoveries first

5 See: Arnold Boscowitz, *L'Âme de la Plante*. Paris: P. Ducrocq, 1867, and J.J. Grandville, Taxile Delord, and Alphonse Karr, *Les Fleurs Animées*. Paris: G. de Gonet, 1847.

6 On the influence of Ruprich-Robert on Sullivan, see David Van Zanten, "Sullivan to 1890," in Wim de Wit, ed., *Louis Sullivan: The Function of Ornament*. New York: W. W. Norton, 1986.

7 "La beauté sera comestible ou ne sera pas." Salvador Dali, "De la Beauté Terrifiant et Comestible de l'Architecture Moderne Style," *Minotaure*, no. 1, 1933.



Fig. 6 Detail of Hector Guimard's Paris Metro with caption: "THE SOFT BASE OF THIS COLUMN SEEMS TO SAY: EAT ME!" from Salvador Dalí, "De la beauté terrifiant et comestible de l'architecture Moderne Style," *Minotaure*, no. 1, 1933.

thematized by ornamentalists in the nineteenth century were internalized into design criteria, constructional logic, or organizational diagrams. In the language of the avant-garde architect, whether Expressionist, *Sachlich*, De Stijl, or Constructivist, there was a pronounced logic of organicism, intrinsic to the meaning of words such as functionalism, type, and circulation.<sup>8</sup> Le Corbusier was very much representative of this tendency, and in the pages of his publications one finds numerous illustrations of organic structures such as sections through flowers and shells and diagrams of digestive and nervous systems. In one telling description, published in 1928 in *Une Maison, un Palais*, Le Corbusier juxtaposed an image of the leaves of a linden tree drawn in his youth ("at a time when I piously occupied myself with the study of

8 For a contemporaneous analysis of the organic metaphor in the work of the German avant-garde see Adolf Behne, *The Modern Functional Building*. Santa Monica, CA., Getty Publications, 1996. More recently, there have been a number of reappraisals of the organic metaphor in the work of modern architects. See especially Detlef Mertins, "Living in a Jungle: Mies, Organic Architecture and the Art of City Building," in *Mies in America*. New York: Harry N. Abrams, 2001.

the wonders of nature,” he writes), with a photograph of Villa Stein taken obliquely as to foreground the departure of a car from its internal car park. “I show you the branch of a linden tree,” Le Corbusier remarked, “You will observe a phenomenon of circulation, an expression of its vital motives. Everything, and also in architecture, is a question of circulation.”<sup>9</sup> The maxim “architecture is circulation,” which he coined two years later in *Précisions*, pointed to the profound analogy between the movement of the vital and organic life-forces and that of the human form within the architectural and urban fabric.

In the work of avant-garde architects, the organic metaphor was just that; a metaphor, an analogical device that served to establish penetrating relationships between the living organism and the living building. Apart from German architect Hermann Finsterlin, only Dada and Surrealist artists truly entertained the possibility of architecture completely dissolving its age-old tectonic and constructive traditions in favor of the forms of fleshy and vegetal organs.<sup>10</sup> Writing in the journal *Minotaure*, Tristan Tzara called for an “intra-uterine” architecture, cavernous and voluptuous dwellings that would unleash pre-natal desires. “Modern architecture, hygienic and stripped of its ornaments,” Tzara warned, “has no chances of survival.”<sup>11</sup>

With the conjoining of computational and genetic research of the last few decades, architects today are again mesmerized by the capability of producing so much complexity and variation from compact and simple codes. Like Goethe’s *Urpflanze*, and the ornamental work that it occasioned, one could argue that architects are attempting once more to capture and display the fleeting sources of life. And without the irony and political motives of Dada and Surrealism, contemporary designers have begun to generate architecture directly out of the forms and patterns of life, with the one key difference that nature today has become as much a product of design as the genetically modified ornaments and patterned organisms that populate their works.

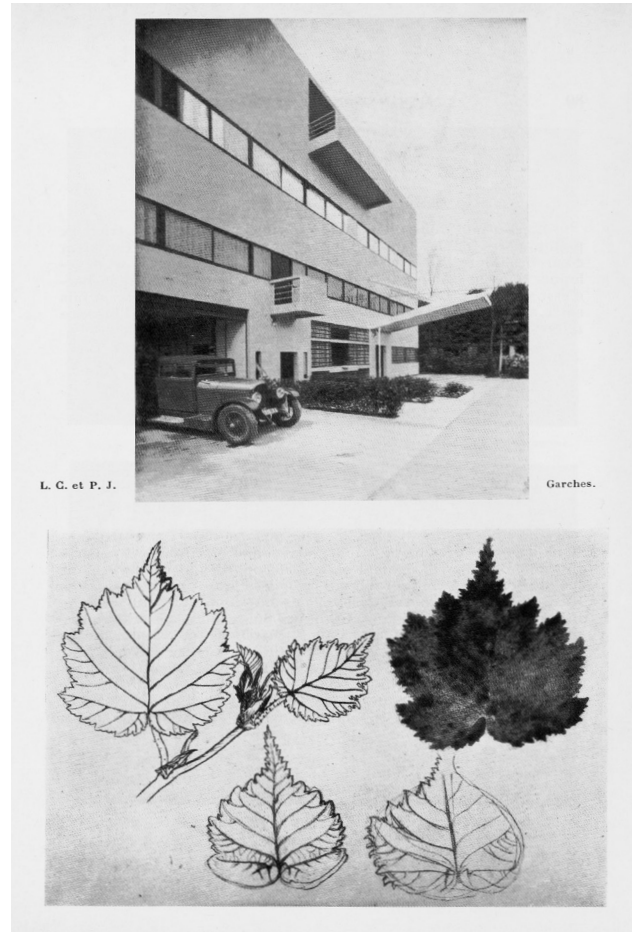


Fig. 5 Le Corbusier, *Une Maison, un Palais: à la Recherche d'une Unité Architecturale*. Paris: G. Cres et Cie, 1928, p. 79. © 2012 Artists Rights Society (ARS), New York / ADAGP, Paris / F.L.C. “I show you the branch of a linden tree,” Le Corbusier remarked, “You will observe a phenomenon of circulation, an expression of its vital motives.”

<sup>9</sup> Le Corbusier, *Une Maison, un Palais: à la Recherche d'une Unité Architecturale*. Paris: G. Cres et Cie, 1928, p. 78.

<sup>10</sup> “The formal type that is the last greatest genial invention of the terrestrial spirit - organic form - lies between the crystalline and the amorphous. My architecture also sprouts at this transition point. Inside the new house one will not only feel as though one is the occupant of a fabulous crystal druse, but like the internal resident of an organism, wandering from organ to organ, a symbiont of giving and receiving within a fossil of a gigantic mother’s body.” from Hermann Finsterlin, *Frühlicht*, no. 2, p. 36. The quote appears in Adolf Behne, *The Modern Functional Building*, p. 113.

<sup>11</sup> Tristan Tzara, “D’un Certain Automatismes du Gout,” *Minotaure*, no. 1, 1933, 84. One might also mention Salvador Dalí’s *Crisalida* pavilion in the shape of a cocoon commissioned by Wallace Laboratories for the American Medical Association in 1958 in order to visualize the effects of their new tranquilizer drug.