
Yesterday's Tomorrow Was Today: The Revival of Mid-Century Optimism in the Age of Digital Fabrication

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The design of the everyday built environment reflects and gives form to larger, prevailing cultural thoughts and ideas. The extent to which design leads or follows varies over time, but its leadership role may best be seen when new materials and fabrication techniques are introduced into the design arena. "Technology has historically been a catalyst of change, not a conservator of traditions or a refuge for established ways of life and thought."¹ This introduction generally spurs a progressive, visionary tendency among designers, often manifesting as provocative furniture, spaces, buildings, and cities. Because these new techniques are unfettered by traditional forms and methods, freedom leads to exploration and investigation of what might be. The extent to which these items move and reset the deeper sensibilities of the prevailing culture can ultimately determine their long-term success and use in architecture and related fields.

This paper opens for discussion the question of whether contemporary digital design and fabrication can impart a lasting attitude of progressive optimism onto the larger aesthetic and cultural principles of the contemporary built environment. By examining the historic arc of the last major introduction of materials and technologies – mid-20th century American design – and establishing a parallel to current 21st-century design conditions and culture, a base for discussion of future directions of modern culture and design is established.

YESTERDAY

The widespread feeling of hope and faith in the democratic ideal which characterized the early post-war years was expressed in the adoption of Modernism in all areas of design. It had connotations of egalitarianism, dynamism and technological expertise.²

Mid-century modernism as generally discussed applies to American and Latin American design and architecture of the period post-WWII to the Vietnam War – 1945-1965 – characterized by the evolution of the International Style into an optimistic, non-traditional, futuristic approach to form and material. A portion of architectural design of this time can be seen merely as a continuation and normalization of Modernism's interest in the lightness of steel framing and dissolving boundaries to the exterior landscape. The traits relevant to this discussion relate to the heightened interest and celebration

of science and futurism. These would include: exploration of new materials and fabrication processes; visual celebration of scientific discoveries such as atomic power and space exploration; forms and structure which convey a sense of freedom from gravity through flight, speed, and lightness; and fluid / biomorphic forms derived from transportation and biological advancements.

Science and technology held a lauded position in mid-century general culture. Innovation in these areas was seen as strongly contributing to victory in WWII, and the subsequent economic boom was linked to their continued progress and advancement. In the span of a decade, the double-helix structure of DNA was discovered, transatlantic telephone cables laid, and television spread across the American domestic landscape. Atomic energy was an assumed good soon to provide cheap power to the ever-growing list of new technological conveniences being designed and marketed to the American consumer. "The future and progress seemed interchangeable; the past was past."³ The world was entering a new and bright future, and the homes of the burgeoning suburbs, open and airy, required prefabricated objects that embodied this vision.

"New techniques for moulding and glueing plywood had been discovered by American manufacturers during wartime production for the Navy and were now exploited for furniture design, as were plastics with fibre-glass reinforcements."⁴ Numerous designers began to explore the newly available materials and fabrication processes, while the flourishing field of ergonomics gave factual support to the aesthetic principles of streamlining and sinuousness embraced by designers.

The first mass-produced plastic chair was Charles Eames's shell chair of 1951, which had "a single moulded unit for seat and back, made of fibre-glass reinforced polyester resin."⁵ Charles and Ray Eames' La Chaise (Figure 1), also in fiberglass, exists as a biomorphic cloud for lounging. The form breaks with tradition with its radical asymmetry, sense of floating instead of stable support, and lack of bulky padding while contoured to the curves of the body.

While plywood was a known material at the time, technological advancements by the Eames allowed for the creation of compound curvatures and its subsequent introduction into furniture design.



Figure 1: La Chaise (1948)

Their molded plywood chairs and tables were light, durable, and affordable; making them ubiquitous in the mid-century domestic, educational, and commercial landscapes.

The designer Verner Panton, a formal innovator across the field of furniture, introduced the Panton Chair, the first “single-material, single-form, injection-molded chair” for the commercial market.⁶ The chair exists as one languid sweep, existing simultaneously as seat and structure, all whole and no parts (Figure 2). The chair is commonplace in the interiors of contemporary buildings with an expressive fluidity.



Figure 2: Panton Chair (1959)

The industrial designer Russel Wright was a household name at this time. From dinnerware and textiles to appliances and furniture, he introduced objects that “were visually and technically innovative,” and “made modernism accessible to the widest possible audience.”⁷ He experimented with new ceramic forms, glazes, and fabrication models in his American Modern and Iroquois Casual lines of table and cooking ware. Other product lines investigated spun aluminum, melamine, vinyl, wood, and plywood. Additionally, He and his wife Mary published their Guide to Easier Living in 1950, helping to frame the myriad objects of the design landscape with a ‘lifestyle’ sensibility geared to modern suburban living. The book covered both the design of the modern domestic interior and the action of living and entertaining facilitated by modern objects.

This general acceptance and mainstreaming of progressive design established a springboard for architects of the time to build upon. Mid-century architecture can thus be seen as a proving ground for how smaller objects could be “scaled up” to lasting architectural constructions. The built works of William Pereira, Albert Frey, and numerous others dotted the American landscape with innovative forms and roofs which soared, swooped, and defined the expressionistic side of mid-century architecture.

Perhaps no architect better exemplified the prevailing aesthetic and its connection to larger technological innovation than Eero Saarinen. His two airport commissions – Dulles International Airport in Virginia and the TWA Terminal in New York (Figure 3) – embodied the sense of motion and flight which air travel was bringing to the general public. Having no historic precedent



Figure 3: (top) Dulles International Airport (1958-62); (bottom) TWA Terminal (1956-62)

expectations to match, the architecture freely spoke to the future of both built form and transportation.

Noteworthy moments of architecture can, of course, be found in every generation. It is the widespread reproduction and iteration of these works into everyday civic architecture that speaks to the depth and breadth of acceptance of mid-century aesthetic principles. All across the Americas, museums, civic centers, university buildings, transportation hubs, sports facilities, banks, etc. were designed and built in this exuberant aesthetic, with the support of the general citizen freely given.

YESTERDAY'S TOMORROW

As a forward-looking people, we Americans have fervently welcomed technology and invention into every aspect of our lives, disdaining the old.⁸

Every culture tends to extrapolate their current cultural trajectory forward into the future, and the mid-century was no exception. Science and technology were to continue solving the small problems of everyday life, and the global problems of hunger, politics, and land availability. Designers would continue to incorporate new materials and equipment into objects and buildings, constantly reinventing and asking ‘what if?’ “Housewives of tomorrow would wash down the drain dishes made of meltable plastic and take their old nylons to chemical factories to be converted into candy.”⁹



Figure 4: The Atomium (1958)

The Brussels World Fair of 1958 expressly promoted “faith in technological progress, innovation in art and design, and a general

optimism about the modern world.”¹⁰ Its symbol was the Atomium (Figure 4), a 335-foot-high inhabitable model of an iron molecule. Nine interconnected aluminum spheres, each with a diameter of sixty feet, promised a future architecture more radical than anything existing at the time.

Across America, the “House of Tomorrow” was envisioned, and often built, by myriad architects and industrial designers. Noteworthy examples include the Hurricane House by Edward Koch, which repositioned itself according to the weather; and the Chemosphere House by John Lautner, which hovered over any landscape on a single support column.



Figure 5: Monsanto’s “House of the Future” (1957)

Douglas Haskell of the AIA wondered in 1954, “In architecture, will atomic processes create a new ‘plastic’ order? Tomorrow’s structure may be typically all ‘skin’; chemical, electronic, and radionic (sic) manipulation will be the dominant processes in building.”¹¹ This mindset was best embodied by the “House of the Future” sponsored and built by the Monsanto Corporation (Figure 5). It was built of polyester reinforced by fiberglass, similar to the chair shells of the Eames’s. The pod-like house embraced a rounded, modular construction principle which facilitated quick, affordable, prefabricated construction as the future building model.

This belief in architecture’s prefabricated, and therefore technological, future was embodied in visionary city designs of architects around the world. The litany of mega-structure proposals investigated new and dense urban possibilities, engaging with difficult sites of land, sea, and air. These would be possibly only by the sustained application of technology at greater scales than in use at the time. While diverse in form and site, these proposals most often utilized, in some form, a large-scale prefabricated system, usually with smaller prefabricated modules which connected

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in multiple potential ways. Classic examples include Habitat 67 by Moshe Safdie, and the works of Paolo Soleri, Archigram, and the Japanese Metabolists. While driven by technology, these architectural proposals for tomorrow embodied a profound and radical reshaping of personal and community relationships at odds with the actual lives of the American general public.

By the 1970's, the optimistic spirit which had driven American design gave way to fear of science and the global problems for which it was now blamed. Architecture moved from the futurism of mid-century modernism to the immediate present of Brutalism, and the pseudo-past of Post-modernism. The domestic landscape thus drifted back slowly into an embrace of traditional aesthetics. The origins of post-modernism have been well documented and debated by others, but 'futuristic' is certainly not an applicable term.

TODAY

Contemporary design has undergone a comparable transformation due to the ever-increasing use of digital modeling, material science, and innovative fabrication technologies. Expansive use of new materials and techniques of production have helped again to loosen functionalist and traditionalist constraints. A corresponding resurgence of streamlined and biomorphic design has entered mainstream popular culture, as seen in the works of Karim Rashid, Philippe Stark, and the ubiquity of Apple products.

An explosion of new materials offers the designer freedom as never before. It is widely held that "more new products have been developed in the last twenty years than in the prior history of materials science."¹² And many of these developments have been directly driven by the problems of dwindling raw materials, energy consumption, and industrial waste which mid-century design did not address or imagine.

Computers have advanced far beyond the dreams of the previous century, facilitating visualization and fabrication technologies which promise once again to fundamentally change how buildings are constructed. CNC lasers, routers, benders, mills, printers, etc. are becoming standard shop equipment for schools and business.

Architecture has responded by reinvestigating adventurous and biomorphic forms of intricate complexity. Examples abound in every school, magazine, and conference; and increasingly across the built landscape. Mid-century design is again embraced and celebrated throughout the design communities.

TODAY'S TOMORROW?

Mid-century modernism was dominant and pervasive for a generation, but nonetheless receded with the tide of history. How will current digital trends fare? At this point the question cannot be answered. Digitally fabricated installations in, on, and around lobbies, schools, and museums abound, and iconic pieces of

complex digital architecture are being envisioned and built around the world. But, however pervasive the aesthetic and creative mindset appears in education and contemporary architecture, the level of cultural and domestic saturation is suspect.

It is the commonplace built landscape that has transformed the least. While architectural discourse has certainly moved on from the traditionalism inherent in post-modernism, pseudo-historicism is the prevailing aesthetic of middle-class American domesticity, and unassuming modernism the more common public aesthetic. The popularity of Dwell magazine may imply a love of clean lines and an embrace of the non-traditional, but its strong connection to mid-century design may also speak to simply another form of nostalgia. The public appears perfectly happy to embrace technological devices such as the iPad and flat-screen TV's, while maintaining a built environment which passively ignores the transformational potential the devices embody.

An understanding of the formal morphologies of the fluid and layered materials of the fifties can provide contemporary insight and new avenues for lasting architectural expression. Ultimately, designers must help the larger culture once again embrace the future that design promises, affecting change at the 'lifestyle' level of the everyday. Otherwise, progressive design and pre-fabrication will exist primarily as a niche playground for designers, sidelined from the mainstream culture of the everyday built environment.

ENDNOTES

- 1 Joseph J. Corn and Brian Horrigan, *Yesterday's Tomorrows: Past Visions of the American Future* (Baltimore: Johns Hopkins University Press, 1984), xvi.
- 2 Anne Massey, *Interior Design since 1900* (London: Thames & Hudson, 2008), 145.
- 3 Corn and Horrigan, *Yesterday's Tomorrows*, xiii.
- 4 Massey, *Interior Design since 1900*, 155.
- 5 Ibid.
- 6 Charlotte Fiell and Peter Fiell, *Chairs* (Köln: Taschen, 2002), 121.
- 7 Paul Warwick Thompson, introduction to *Russel Wright: Creating American Lifestyle* by Donald Albrecht et. al. (New York: Harry N. Abrams, 2001), 6.
- 8 Peggy A. Loar, foreword to *Yesterday's Tomorrows* by Corn and Horrigan, x.
- 9 Corn and Horrigan, *Yesterday's Tomorrows*, 82.
- 10 Andrew Garn, *Exit to Tomorrow: World's Fair Architecture, Design, Fashion 1933-2005* (New York: Universe, 2007), 97.
- 11 Corn and Horrigan, *Yesterday's Tomorrows*, 82.
- 12 Blaine Brownell, *Transmaterial* (New York: Princeton Architectural Press, 2006), 6.