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Atomic Geometry in Design

SPHERE FACTOR

On December 6, 1941, President Roosevelt pledged to provide the financial and technological support necessary for the construction of an atomic bomb. Roughly two decades later, on August 5, 1963, President Kennedy joined the Soviet Union and Great Britain in signing the "Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space, and Under Water." The Atomic Age is bookmarked by these two significant events and connects two dissimilar decades of American history: the 1940s, a decade that is ravaged by images of a horrifying war, and the 1950s, best known for its unabashed materialism. A time of fear and of promise for a better future, the Atomic Age expressed polarity in more ways than one. The miniscule, invisible atom could unleash furious destruction as witnessed in Hiroshima and Nagasaki, but it also could be reined in to provide an inexpensive source of power. And so the atom was at once threatening and tempting.

Atomium, by André Waterkeyn, Brussels, Belgium, 1958, photo © Rafal Dudziec and iStockPhoto.com

Perhaps because of the power it possessed, the scientific notion of the atom was highly politicized, advertised, commoditized and domesticated. As is often observed when novel technologies arise, nuclear power was described as something that would create a world "in which there is no disease, food never rots and crops never spoil… where dirt is an old-fashioned word and routine household tasks are just a matter of pushing a few buttons."[1]

A Public Entrance

Though abstract and invisible, the atom entered the public realm and assumed material form in artistic and popular expression. The symbol of the atom—a nucleus encircled by vigorously spinning electrons—became a metaphor for scientific progress and technological superiority. It began to be seen in art, architecture, graphics, products, film, pulp and science fiction, and even music.

Physical models of molecular and atomic structures, often represented as spheres connected with cylindrical rods used in science class and research laboratories, became inspirations for architecture. The most literal translation of this was the Atomium, which was designed by André Waterkeyn and built for the 1958 World's Fair in Belgium. Now at the Heysel Park in Brussels, this 335-foot-tall building mimics the structure of the iron crystal in an exaggerated scale with nine spheres and connecting tunnels between them. Designed to portray scientific progress, the Atomium may be seen as a signifier of the techno-optimism of this age.

The atom served as inspiration also for countless examples of graphics and products such as the Ball Clock designed in 1947 by Irving Harper for George Nelson's office, as well as countless street signs and advertisements. Initially derived from an illustration made during the design process of six lines intersecting at one point to represent the measurement of time, the Ball Clock looks uncannily like electrons revolving around a nucleus. One description calls it an object that has "spokes with spherical terminals."[2]

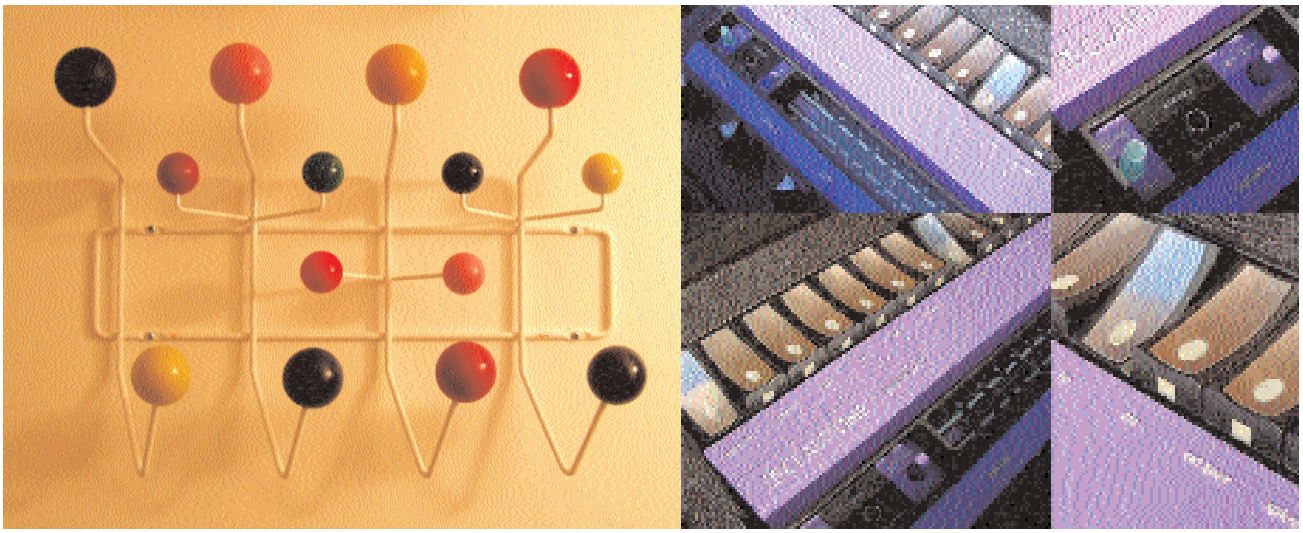
Just as the U.S. government campaigned to promote acceptability of the atom, technology was used as a means of selling household products. Everything from cars to cooking ranges was advertised with techno-jargon. Though this form of visual exploitation of prevalent and progressive technological icons is not unusual in advertising, it seems particularly tactless in light of the demonstrated destructive power of atomic energy.

Inspiration in Worlds Big and Small

Atomic structure is analogous to planetary structure. The obsession with the microcosmic world of the atom paralleled an immense interest in venturing into the macrocosm, the unexplored and unmapped outer space. Political power was expressed through nuclear domination, technological superiority and control of outer space. In the late 1950s, the Soviets and the Americans launched satellites in quick succession and made plans to send beast and man to the moon. Thus began the Space Race. With no air drag to worry about, satellites hovering over earth did not need teardrop profiles or tailfins: They could have taken on almost any form. Yet, the initial ones were spherical, once again evoking the formal vocabulary of the atom.

The Constellation, a spherical vacuum cleaner designed by Hoover, also successfully exploited the idea of spatial/atomic metaphors, as did a host of other products, from Ray and Charles Eames's Hang-It-All to

Top to bottom: Hoover Constellation Vacuum Cleaner advertisement; © Hoover Historical Center/Walsh University, used with permission ■ Hoover Constellation Vacuum Cleaner, first introduced in 1954; Courtesy Courtney and Yancy Everhart, IDSA



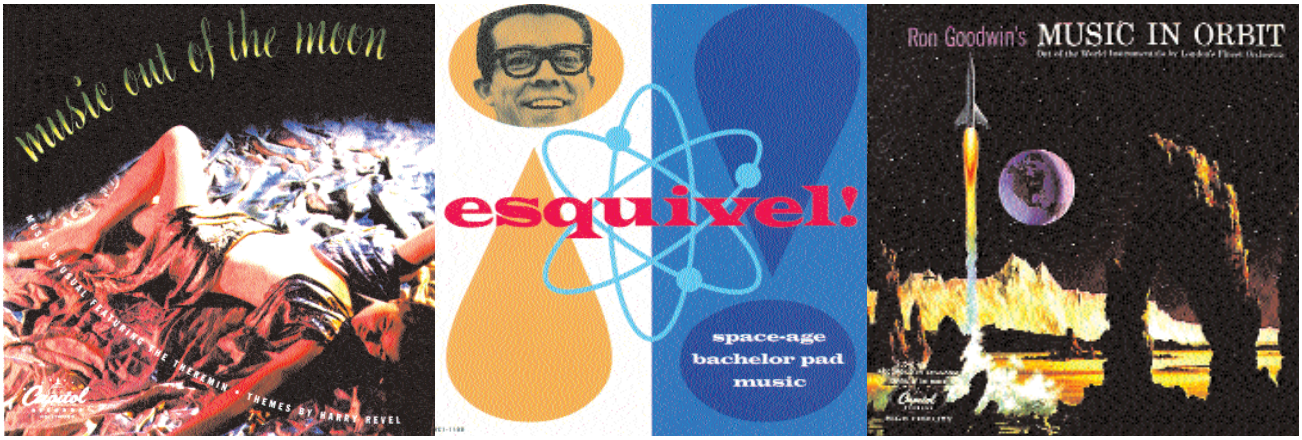
Left to right: Hang-it-All by Ray and Charles Eames, 1953; Design Ray and Charles Eames, Photo courtesy Renata Hejduk ■ Push buttons from the Clairtone Solid State T7, c. 1960s; Courtesy Peter J. Wolf

Richard Neagle's Bamboozler. Advertised as the only vacuum cleaner that "walks on air," the Constellation hovered on a cushion of air allowing easy travel through the house. It was also featured as a pop icon in "Just What Is It That Makes Today's Homes So Appealing?," a collage/painting done by Richard Hamilton in 1956. In Hamilton's living room, this vacuum cleaner is one of many iconic objects that provides a commentary on 1950s consumption, the proliferation of electronic gadgets and the obsession with space.

The Push Button for Success

The fascination of Americans with the atom, space, science and technology can be explained as "commodity scientism," a term that Michael Smith coined to describe people's faith in the overwhelming qualities and rewards of science and technology.[3] On products, no other device promised the ease, magic, instant reward and hidden power of technology better than the push button.[4] In the 1950s, banks of these switches started appearing on stovetops, television sets, cars (the Edsel had them on the steering wheel) and other appliances, promising sophisticated and detached convenience.

Like the atom, the push button had a sense of polarity. While it signified the user's control over the appliance, once pushed, the device took over, defiantly exercising its own control. This simple mechanical device, seen still on some washing machines and blenders, became a potent symbol of progress.



Left to right: Harry Revel's *Music Out of the Moon*, featuring eerie sounds of the Theremin, 1947; © Capitol Records, used with permission ■ Juan Garcia *Esquivel's Space-age Bachelor Pad Music*, mood music from the 1960s, re-released 1994; Album cover design by Elizabeth van Itallie, © Bar/None Records, used with permission ■ Ron Goodwin's *Music in Orbit*, record cover inspired by space, 1958; © Capitol Records, used with permission

Listen Up

The many appliances that flooded American homes in the 1950s found their way into the music of the times. In a track entitled, "You're the Top," a Cole Porter song, Dean Elliott and His Big Band created music that captured the aural landscape of the kitchen. Whirring blenders and ringing telephones provided electro-mechanical backup to the horn section.

Now catalogued as "space-age pop" or "bachelor-pad music," albums from the atomic age exploited some of the technological advances that had been made. Of particular importance was the introduction of the long-playing record (LP), which promised high fidelity and stereophonic sound. In Juan Garcia Esquivel's "Latin-Esque," sound pans from the left speaker to the right and back again in an effort to create "movement so real, your eyes will follow the sound."[5] Needless to say, the front cover of the recently released CD titled *Space Age Bachelor Pad Music*, features a diagrammatic representation of electrons spinning in their elliptical orbits.

This is "mood music," to be played by swinging bachelors on their fancy hi-fis while mixing cocktails for their dates. Album covers often presented dark, fantastic moonscapes and had titles such as *Man in Space with Sounds* and *Music in Orbit*. A track from *Music out of the Moon* (which was incidentally the first four-color LP cover) called "Lunar Rhapsody" is an eerie, haunting song that evokes a sense of the large vacuity of space.

Song titles like "Uranium" by the Commodores and "Atomic Power" by the Buchanan Brothers make direct references to the atomic age. Metaphorical allusions to nuclear chemistry are seen in the lyrics of "Atom Baby Atom," a song by the Five Stars: "Atom bomb baby, boy she can start / One of those chain reactions in my heart. / A big explosion, big and loud, / Mushrooms me right up on a cloud."[6]

In his book *Profane Culture*, Paul Willis writes that "cultural experience [is] essentially … shared material experience."[7] Cultural experience involves interaction with everyday life and the objects one encounters within it. Big changes affect small things. The tiny atom, with its hidden energy, its political power, its scientific signature and the propaganda around it, formed the nucleus of an ambivalent worldwide experience. And, in an evocation of Charles Dickens' phrase, this was indeed "the best of times and the worst of times." ■

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2 Martin Eidelberg, *Design 1935-1965: What Modern Was* (New York: Harry N. Abrams Inc., 1991): 255.
3 Michael L. Smith "Selling the Moon: The U.S. Manned Space Program and the Triumph of Commodity Scientism," in *The Culture of Consumption: Critical Essays in American History, 1880-1980*, ed. Richard Wightman Foz and T.J. Jackson Lears (New York: Pantheon, 1982).
4 See Thomas Hine, *Populuxe: From Tail Fins and TV Dinners to Barbie Dolls and Fallout Shelters* (New York: MJF Books, 1986).
5 Liner notes from *Esquivel, Space-age Bachelor Pad Music*, re-released by Bar/None records in 1994, original by RCA.
6 Allan M. Winkler, *Life Under a Cloud: American Anxiety About the Atom* (New York: Oxford University Press, 1993): 142.
7 Paul E. Willis, *Profane Culture* (London: Routledge & Kegan Paul, 1978): 2.

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