

Art Out of Bottles?

Exploring the Invisible: Art, Science, and the Spiritual. By Lynn Gamwell, Princeton University Press, Princeton and Oxford, 2002, 344 pages, \$49.95.

Sometime in the early 1960s, Brown University built a new home for its physics and engineering departments. Barus–Holley was opened with considerable fanfare; shortly thereafter, a commissioned work of art in the form of a massive gray cast metal sculpture, about 20 feet × 8 feet, was attached to the right lobby wall. To me, the work appeared to be a jumble of large crushed gears and airplane propeller-like thingums, and seemed to equate technology with the junkyard. I thought this was hardly an inspiration for aspiring scientists. The lobby was recently redecorated in Hyatt–Regency style, and the sculpture is now in storage with its future moot.

BOOK REVIEW

By Philip J. Davis

Over a recent lunch with Gil Strang in the cafeteria of MIT's Walker Memorial, I kept looking at a large mural that had been completed around 1930. In this work, science and technology are depicted as carrying civilization into the wonderful world of the future, a world of peace, prosperity, ease, and happiness. The mural struck me as indicative of its times, but hardly relevant in the current age of anxiety.

Here, very explicitly, are two examples of the marriage of science and technology to art. I do not know how the individual artists, separated by more than a generation, regarded their works, but I found them moralistic and mutually contradictory. I suspect that over the years passing students largely ignored them, regarding them simply as background noise. But who knows what subconscious influence they may have had.

Since the 18th-century Enlightenment, the influence of science and technology on art has been both steady and profound. The Chilean poet and Nobelist Pablo Neruda (1904–1973) asserted that “Only poetry is clairvoyant.” If we delete the word “only,” we see a claim that has been made regularly since classical times. W.H. Auden alluded to Plato's statement that “when music changes its mode, the walls of the city tremble.”

Auden was implying that music is a leading indicator of revolutionary events. Few such claims are made in this book. Rather, science/technology is seen as an engine that has infiltrated and radically changed visual representations.

The ideological approach, as illustrated by the two university examples that open this review, is only one way the influence has manifested itself. Lynn Gamwell, who is director of the Art Museum at SUNY Binghamton, and an adjunct professor of science at the School of Visual Arts, New York City, has given us a history of those portions of science and art that intermesh. The major art movements of the past century and a half—Impressionism, Expressionism, Art Nouveau, Cubism, Dada, abstract and geometric art—have been influenced by science. Her book is rich in detail, and sumptuously illustrated and produced; it displays a lifetime of knowledge.

Allow me to elucidate Gamwell's subtitle. By “art” is meant traditional visual art: art with a big “A.” Computer-generated art, one of the most significant incursions of technology into art is, alas, not covered.

By “science” is meant zoology, biology, physics, and a couple of failed or pseudo-sciences: phrenology, spiritualism. (Gamwell seems to be a bit soft on mysticism.) Science also includes a bit of mathematics: Lobatchevsky, Boole, Riemann, Poincaré, Minkowski.

By “the spiritual” is meant a salad bar of things, mostly psychology in its various aspects: Pavlov, Kraft-Ebbing, Charcot, Freud, Jung, Lacan. Judging from three parallel time lines given in an appendix, though, the spiritual is also taken to include such productions as Marx and Engel's *Communist Manifesto* (1848), Russell and Whitehead's *Principia Mathematica* (1910), and Madame Blavatsky/Rudolf Steiner's occult theosophy.

Marx? Why not? *Das Kapital* contains much about the abysmal conditions of British workers in the 1840s. And speaking of the notorious Blavatsky, did you know that in 1875 she lived for a short time in Philadelphia, a few blocks from SIAM's offices, in



Eve Andrée Laramée's Apparatus for the Distillation of Vague Intuitions. Photograph courtesy of the artist.

the building that now houses the White Dog restaurant?

What scientific developments or theories have particularly attracted the artistic imagination? Among them are geometric forms in nature, theories of color, evolution by natural selection, abnormal psychology, relativity, atomic physics, and cosmology. In mathematics, delight in “pure shape” (whatever that means), in non-Euclidean and higher-dimensional geometries, in randomness have been the inspiration for works of art.

What is produced when science marries art? In an initial and superficial view, the influence seems to be located in imitation or transformation of visual forms produced by science, many of them invisible to the naked eye.

Gamwell displays and juxtaposes numerous instances. Thus: an illustration of Johan Christian Dahl’s painting *A Cloud and Landscape Study by Moonlight* (oil on paper, 1822) is placed opposite an illustration from Luke Howard’s 1803 *Essay on the Modification of Clouds*. Victor Horta’s (1893–95) floor landing and main entrance to the Tassel House in Brussels, with beautifully flowing tendrils decorating their tiles, and their sinuous mural designs and ironwork (Art Nouveau), are juxtaposed to biologist Ernst Hæckel’s drawings (1899 and earlier) of *Desmonema*, man-of-war-like sea animals with medusa-like strands floating from their main bodies. Van Gogh’s *Starry Night* (1889) faces a drawing of a spiral nebula from Flammarion’s (1881) *Astronomie Populaire*. Moving to the 20th century, the 1941 painting *Interstellar Exchange* of Herbert Bayer (Austria/USA, 1900–1985) is shown against a Mount Wilson red light photo of the Crab Nebula.

Imitation (or *mimesis* to use art-critical language) is almost a dirty word in today’s art world. And it would be vastly inaccurate to see the influence of science as limited to mere imitation. Yes, there are pictures here that resemble fractals. Yes, the poet Guillaume Apollinaire (1880–1918) suggested early on the random as a method for creating verse. Following suit, and long before Jackson Pollock created drip art, Marcel Duchamp dropped pieces of string and affixed the random collection to a support. But art is feeling, not illustration.

The artistic imagination absorbs the science (or the pseudoscience) from descriptions in the Sunday supplements: pictures, words, pop-philosophy . . . and then creates its own products. The artist often accompanies the artworks with a verbal gloss. In the wide margins of her book, Gamwell has quoted many artists and commentators.

On abstraction:

“We all have to learn to see in terms of pure color and forms and not think about what they might depict.”—August Endell (1896)

On space:

“Space and time are the only forms on which life is built and hence art must be constructed.”—Naum Gabo/Antoine Pevsner (1920)

On perspective:

“Perspective is not the imitation of the spatial structure of one’s visual experience, but a ‘symbolic form’ expressing one’s concept of the world.”—Erwin Panofsky (1924)

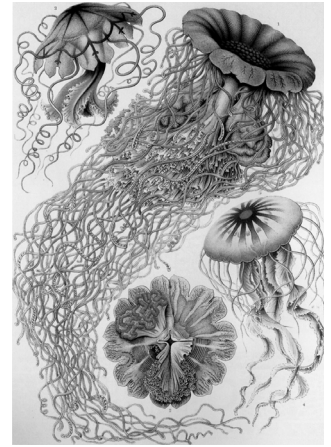
Over the years, I have never paid much attention to what artists, composers, authors say about their own works, nor to the comments of their critics or their historians; such discussion generally enhances neither my understanding nor my enjoyment of the work. And these people can disagree violently among themselves. Can we glimpse Einstein’s relativity in Cubism? Gamwell has encountered conflicting opinions:

“With (Erwin) Panofsky’s immense authority behind the connection of Cubism to relativity, it became engraved in the master narrative of modern art. . . . But an authority equal to that of Panofsky, Meyer Schapiro, presented overwhelming evidence against any connection. . . .”

What would it mean to translate abstract mathematics into a visual equivalent? As a naïf in creating art, I once tried an experiment. I replaced each of the six elements in the multiplication table of the (non-abelian) symmetric group D_3 by a color: blue, violet, red, orange, yellow, green; the result was a 6×6 patterned color square. My brain reported that the result was not patterned, neither exciting nor memorable. Were the resulting “pixels” too large to produce coherence or interesting chaos? Given the number of colors now available on a computer, should I have tried my experiment with a non-abelian group of high order? Kathleen Shannon of Salisbury University has done just that with selected dihedral groups up to D_{32} . (A full-color version of her picture can be seen at <http://faculty.salisbury.edu/~kms Shannon/pascal/SIAM.htm>.) What she has produced has considerable coherence, but is it art or merely pattern?

Artists, reading popular accounts and even consulting mathematicians, are not bound by what they hear. They allow free rein to their imagination and come up with whatever. If an artist were to announce that his latest work had been inspired by the fact that the axiom of choice implies that any set may be well ordered, I would not gainsay him.

We are now in an age of multimedia and even collectively produced art. Works of art today combine every conceivable medium: paint, plastics, piles of dirt, written words, tape-recorded sounds, light, found objects, slides, movies, computers, haptic (i.e., feely-touchy) experiences. Long expository paragraphs that seem to be an integral part of the art object are slapped on adjacent museum



One of Ernst Hæckel’s drawings of *Desmonema*. From *Exploring the Invisible*.

walls. We're invited to absorb beyond the visual and to react to the totality. There appears no longer to be a common understanding among consumers of art, as there was in, say, the Renaissance, as to what a piece of art is supposed to signify.

Consider the case of Eve Andrée Laramée (American, born 1956). She has constructed a work consisting of several assemblages of chemical glassware: bottles holding colored liquids, connected in a random and absurd order. She calls her creation *Apparatus for the Distillation of Vague Intuitions*, and I found it both striking and amusing. "Through my work," Laramée explains,

"I speculate on how human beings contemplate and consider nature through both art and science in a way that embraces poetry, absurdity, contradiction and metaphor."

I find her philosophy appropriate to her work and her title.

"What is art?" asked Aristotle, who, as opposed to jesting Pilate, stayed to give an answer. Art, he said, is an imitation of nature that gives rise to an emotional experience. Two and a half millennia later, the contemporary Korean American video artist Nam June Paik produced a narcissistic definition: Art is what artists do.

What does Lynn Gamwell think about the future of science and art? Following Peter Ouspensky (metaphysician and mystic, 1878–1947), whose view was that "science must come to mysticism," she says:

"With the vision of cosmic unity gone, cynicism and mysticism dominate the landscape of art, science, and the spiritual at the opening of the twenty-first century."

As for me, I would switch Plato around: The walls have trembled, and art is changing its mode rapidly. It is now something other.

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