Science in Context **17**(4), 579–609 (2004). Copyright © Cambridge University Press
DOI: 10.1017/S0269889704000274 Printed in the United Kingdom

Explosive Propositions: Artists React to the Atomic Age

Stephen Petersen

University of Delaware

Argument

"How should a modern artist react to the atomic age?" *Time* magazine posed this question in 1952 to open a review of an exhibition of paintings inspired by the "explosion of the atomic bomb" and by the "discovery of nuclear energy." The energetic paintings of the Italian Spatial Movement were, according to *Time*, "almost as explosive as the bomb itself." "Explosiveness" was a defining feature of much 1950s art, whose main impulse, gestural abstraction, has previously been understood as the urgent expression of the artist's subjectivity. This paper argues that explosiveness in art can also be seen as an "expression" of the realities of the nuclear era. Postwar artists were ambivalent about the explosive forces, both liberating and devastating, that lay within the atom. Toward the end of the 1950s, no longer content merely to represent atomic disintegration, some artists went so far as to propose the outright self-destruction of the work of art as the only fitting means of expression in the atomic age.

> One must – and this is not an exaggeration – keep in mind that we are living in the atomic age, where everything material and physical could disappear from one day to another, to be replaced by nothing but the ultimate abstraction imaginable.
> – Yves Klein 1958 (Klein 1973, 10)

The devastating explosions of the atom bomb on Hiroshima and Nagasaki in August 1945 announced, in spectacular fashion, the advent of the atomic age. Energy had been released from matter, not only in theory but in full-blown practice. "The atomic or nuclear age," wrote Alwyn McKay, "is the age in which Man learned how to tap the energy of the atomic nucleus . . . explosively in bombs or at a steady, controllable rate in nuclear reactors" (McKay 1984, 132). For good or ill, the dramatic appearance of the atomic bomb promised a new era of unprecedented forces brought to bear on humanity (see Boyer 2001). Almost overnight, the "atomic" became a ubiquitous category in Western culture, a sign at once of progress and decay, energy and death. At the same time, the cultural significance of science underwent a sudden shift. No longer perceived largely as a force of enlightened rationalism, science came to be viewed with suspicion as a potential agent of destruction by both intellectuals and portions of the wider public. Indeed, for some nuclear physicists themselves, the use to which their scientific discoveries had been put was profoundly disturbing (McKay 1984, 118–19). For modern artists at mid-century, the advent of the atomic age provoked a crisis of a different sort, as the threat of nuclear annihilation and radioactive contamination

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

confronted the very ideals of modernity, notably the belief in human advancement and scientific and technological progress.

Breakthroughs in physical science in the early part of the twentieth century had already spurred visual artists to rethink the relation of pictorial representation to the external world and increasingly to emphasize the importance of self-expression in art. The presence of powerful yet invisible forces such as electricity and the x-ray that could penetrate solid matter suggested to artists a higher form of reality than that apprehended by the senses alone, prompting formal innovations including the development of non-objective art. As early as 1913, in his *Reminiscences*, the painter Wassily Kandinsky traced his radical invention of a totally abstract form of painting to the unsettling notion, popularized soon after the turn of the century, of the atom's divisibility:

> A scientific event cleared my way of one of the greatest impediments [to breaking with artistic convention]. This was the further division of the atom. The crumbling of the atom was to my soul like the crumbling of the whole world. Suddenly the heaviest walls toppled. Everything became uncertain, tottering and weak. I would not have been surprised if a stone had dissolved in the air in front of me and become invisible. (Kandinsky 1964, 27)

For Kandinsky and many others, the grounding of positivistic science in material, observable reality was completely undercut by this discovery. The breakdown of the atom's integrity became a metaphor for the crisis in materialism that Kandinsky experienced, spurring his inward turn to abstraction (see Waddington 1970, 64–71). The idea that matter was in fact made of charged particles in constant motion found novel expression in the work of other modern artists as well, among them Marcel Duchamp, whose hermetic painting *King and Queen Surrounded by Swift Nudes* of 1912 has been shown by Linda Dalrymple Henderson to represent the new electron theory as found in popular scientific literature of the day (Henderson 1998, 18–22).

The unleashing of energy from matter nonetheless remained a largely theoretical proposition, at least as far as public perception was concerned, until the sudden appearance of the atom bomb in 1945. "The atomic explosion of August 6, 1945, shook me seismically," wrote the famed surrealist painter Salvador Dali, one of the first artists to respond in painting to the atom bomb: "Thenceforth, the atom was my favorite food for thought. Many of the landscapes painted in the period express the great fear inspired in me by the announcement of that explosion" (Dali 1976, 216). Dali's 1945 *Melancholy Atomic and Uranic Idyll* depicts a somber gray landscape full of melting, mutating, and melding forms. An atomic explosion resembles a bursting fruit, a motif found in earlier works by Dali, while egg-like spheres erupt from a variety of forms including a man's throat, suggesting an unnatural gestation. The style of the painting, however, remains quite consistent with Dali's earlier surrealist paintings. The sense of deformation, mutation, and contamination deriving from the radioactive blast was already present in his art. Indeed, such long-standing motifs as the melting clock

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

featured in Dali's best known work, *The Persistence of Memory* of 1931, adapted readily to the task of representing the new nuclear devastation, turning from an inward emphasis to an outward one. As a result of Hiroshima, wrote Dali, "I applied my paranoid-critical method to exploring the world" (ibid.). Dali's prior artistic method, in which he rendered his hallucinations in minute detail, was now focused on the almost fantastic vision of external nature as revealed by science.

Dali found in the atom bomb a fearful revelation that became the source of a new and eccentric personal religion that he called "Nuclear Mysticism," combining Roman Catholicism with nuclear physics. In his 1951 "Mystical Manifesto," he announced that he was embarking on a "new era of mystical painting" that derived, ultimately, from Einstein's Theory of Relativity and what Dali termed the "explosive equivalence of mass-energy." According to Dali, "every quarter of an hour and of a second, matter is in a constant and accelerated process of dematerialization, of disintegration, slipping out of the hands of scientists and thus proving to us the spirituality of all substance" (Dali 1998, 365). Nuclear mysticism seeks ecstasy amidst this dematerialization, an ecstasy that the artist calls "explosive, disintegrated" (ibid., 364). Dali specifically proposed a new classicism aligned with the iconography of the Roman Catholic church but proceeding from what he termed in 1957 the "most transcendent discovery of our epoch . . . a single idea, as concrete as it is significant: *the discontinuity of matter*" (Dali 1957, 71; emphasis in the original). In his art he developed an "atomic" vocabulary of spirals and floating globules that he combined with religious and classical imagery, as in his 1952 drawing *Corpuscular Madonna*, in which the Raphaelesque seated Madonna and Child is formed from whirling particles in the form of spheres and horn-like solids.

In his 1959 *Anti-Matter Manifesto*, Dali announced his total conversion from a painter of psychology to one of nuclear mysticism. Proclaiming that "today the exterior world – that of physics – has transcended the one of psychology," he declared his atomic intentions using terminology drawn loosely from particle physics: "It is with pi-mesons and the most gelatinous and indeterminate neutrinos that I want to paint the beauty of the angels and of reality" (Dali 1998, 366). One in a series of ink drawings done around 1958 renders an angel in a flurry of densely swirling calligraphic marks, the figure simultaneously formed and dissolved with rapid hatchings (fig. 1). Discontinuity and dematerialization of the figure had become for Dali the stuff of spiritual fantasy.

Dali's eccentric attempts to represent the mysteries of energy at the subatomic level, while uniquely his own, can also be considered part of a larger problem of "painting's adjustment to the atomic age," as the American artist Ad Reinhardt phrased it in 1946. This problem was a very real one for avant-garde artists in the postwar period. Though images of atomic blasts quickly had become familiar through photographs of fireballs and mushroom clouds in the 1940s, the atom bomb nonetheless posed a new challenge for visual art. The issue of how to represent it became a problem of artistic language – what could art say about the bomb?

In 1946, two important American artists responded to the Bikini Atoll test bombings held in July of that year, using markedly different styles of representation. The social

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

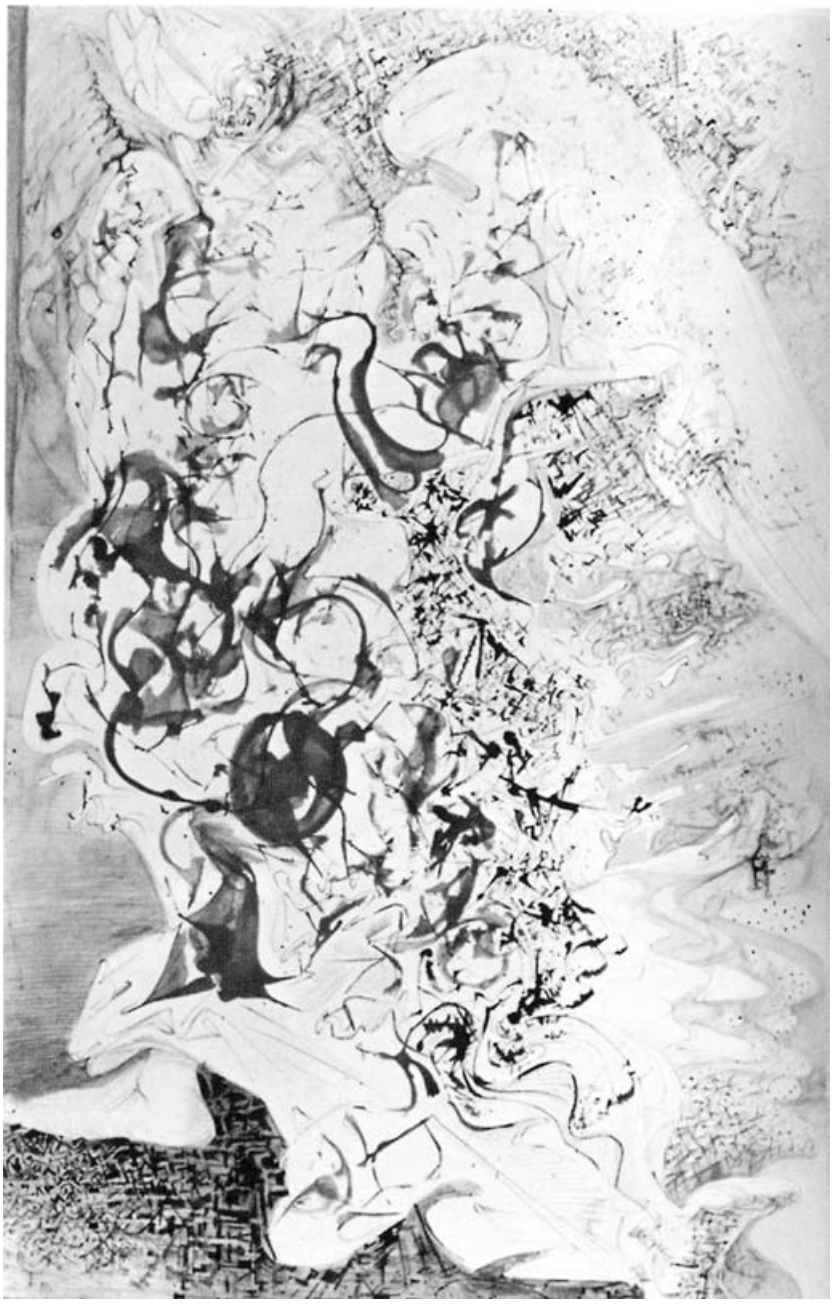


Fig. 1. Salvador Dali, *Angel*, c. 1957–1958, ink and gouache on paper, 44.5 × 28.5 cm. Private collection. © 2004 Salvador Dali, Gala-Salvador Dali Foundation/Artists Rights Society (ARS), New York.

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press



Fig. 2. Philip Evergood, *Renunciation*, 1946, oil on canvas, 125 × 90 cm. Private collection.

realist artist Philip Evergood depicted the Bikini test in his *Renunciation* of 1946, which shows a group of apes surrounding a crumbling brick kiln as a fleet of warships is scattered by an atomic blast in the form of a mushroom cloud (fig. 2). In the

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

foreground two of the apes gesture in evident disgust at such barbarism, one offering an unknown commentary. If the brick structure refers to ovens of the concentration camps, as has been suggested (Frascina 1993, 149), then Evergood means to equate the atomic bomb with the atrocities of the European Holocaust. Viewed more generally, the kiln is a symbol of human culture, here gone awry, as the fire in the kiln takes the explicit form of an atomic fireball. Other apes in the foreground read books, making a mockery of human knowledge and "civilization." Evergood later complained (in a letter to President Truman) that "science has contributed so many new devices of destruction" (Evergood to Truman, 14 April 1951, cited in Taylor 1987, 157). The atom bomb epitomized for Evergood the absurdity of using scientific knowledge to destroy life.

In contrast to Evergood's satirical social statement, Ralston Crawford, an abstract painter, showed the Bikini test blast translated into colors and forms. Crawford, who had designed meteorological charts during World War II, was sent by *Fortune* magazine to observe the atomic tests held at the Bikini Atoll. The artist, whose best-known work consists of orderly abstractions based on industrial forms such as factories, here attempted to use abstract shapes to express the destructive force of the bomb. Two resulting paintings were reproduced in the December 1946 issue of *Fortune*, along with government photographs of the blasts and weather charts by Crawford showing radiation dispersion. One of the abstract paintings referred to the atomic explosion itself (fig. 3), while the other depicted the target of one of the tests, the retired warship U.S.S. Nevada. The caption accompanying the second image explained that the disjunctive shapes and inharmonious colors of the painting did not so much illustrate the scene as reflect the artist's own feelings about war (and indeed the style of the painting follows that of earlier war scenes by Crawford that predated the atomic blasts): "Through a synthesis of the awful shapes and colors born of man's destructiveness, he expresses his sense of that 'compulsion to disintegration' which is for him the central metaphysical fact of war" ([Crawford] 1946, 159).

With his meteorological training, however, Crawford was also concerned with conveying, as accurately as possible, information concerning the measured spread of radioactivity following the test blasts. For the final illustration he designed a weather map charting the trajectory of the radioactive cloud from the Bikini tests, placed alongside a larger map showing the same phenomenon as it would occur following an atomic explosion in New York Harbor. In the latter image, a radioactive plume moves northward along the coast of New England, dissipating into the atmosphere above Nova Scotia. As for the paintings themselves, critics assailed Crawford's abstract rendering as inadequate to the task of responding to the atom bomb. In response to an exhibit of Crawford's paintings of the Bikini tests the artist and critic Ad Reinhardt wrote, "Do crooked shapes and twisted lines represent painting's adjustment to the atomic age? (NO)" (Reinhardt 1946, 12; cited in Haskell 1986, 70). The atomic bomb required an entirely new vocabulary and ultimately, for Reinhardt, a turn to what he

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press



Fig. 3. Ralston Crawford, *Test Able*, 1946, oil on canvas, 60 × 44.8 cm. Georgia Museum of Art, University of Georgia; Eva Underhill Holbrook Memorial Collection of American Art, gift of Alfred H. Holbrook. GMOA 1946.140. © Ralston Crawford Estate.

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

envisioned as an absolute painting, void of any meaning outside itself. In his view, the implications of the bomb for art, and for humanity, went beyond what conventions of pictorial narrative (Evergood) or abstract composition (Crawford) could accommodate.

The atomic bomb was at one and the same time the product of the most advanced science western civilization had to offer, and, in the minds of many in the 1940s, a dark and irrational force that touched on the most primitive and savage impulses. In his influential article "Science and Primitivism: A Fearful Symmetry in the Early New York School," Jeffrey Weiss argues that "the nuclear blast projected contemporary science onto the primordial past. . . . With Los Alamos and Hiroshima, the high intellect of science had blown open an access to nature's heart of darkness" (Weiss 1983, 86). Weiss points out the tendency of mass media to primitivize the atom bomb and at the same time to view science with increasing suspicion: "Faced with a phenomenon entirely new to most of the world, the popular media resorted to a vocabulary of myth and primal forces for description and explanation. . . . From this literature emerges the picture of a community of scientists prying dangerously but urgently into nature's most profound and terrible secrets" (ibid., 85). Weiss goes on to show how, for the serious young painters of the New York School, who were developing a new style that would be called Abstract Expressionism, an avid interest in science and nature, on the one hand, and a deep desire to penetrate the primal mysteries of human existence, on the other, came together in response to the atom bomb. "New York School primitivism was the perfect receptacle for the awe and fear of a world born again into the atomic age" (ibid.). While there was little or no explicit reference to the atom bomb in the organic abstractions of Barnett Newman, Adolph Gottlieb, and others in the mid-to-late 1940s, Weiss argues, "The atom bomb phenomenon did, however, feed into these works, and its presence permeates their primitivizing sensibility" (ibid.). Thus, for example, Newman's 1946 painting *Pagan Void*, which pictorially evokes a cell under a microscope as well as a solar eclipse, is viewed by Weiss as a statement of awe in the face of the atomic bomb. He writes, "Newman's pictorial conflation of cell and eclipse, a counterpoint of microbic life and macroscopic death, recapitulates the cataclysmic potential of the atomic particle" (ibid.). The infinitesimal and the infinite, the genesis and the apocalypse, here come together with the atom bomb. Newman himself would later articulate the idea that following Hiroshima, the imaginary sublime, conceived as an overwhelming force of awesome magnitude, had become real. In this same vein Lynn Gamwell has recently argued that the most ambitious paintings of American Abstract Expressionism, with their grandiose scale and lack of recognizable subject, can be viewed as metaphorical images of the "Atomic Sublime" (see Gamwell 2002).

Perhaps the most radical artistic innovation of the New York School artists to follow in the immediate wake of the first atomic explosions was Jackson Pollock's turn to all-over abstraction in 1946 and his drip paintings begun the following year. The relation of Pollock's charged fields of paint to atomic physics has only gradually emerged as a subject of scholarly speculation, though Pollock himself alluded to the subject in a

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

frequently cited 1950 interview with William Wright. Asked to account for his unusual "method of painting," Pollock responded:

> My opinion is that new needs need new techniques. And the modern artists have found new ways and new means of making their statements. It seems to me that the modern painter cannot express this age, the airplane, the atom bomb, the radio, in the old forms of the Renaissance or of any other past culture. Each age finds its own technique. (Pollock 1999, 22)

Pollock clearly conceived his art as an expression of an age – that of "the airplane, the atom bomb, the radio" – and not only an expression of the artist's inner self. It is important to note, however, that by "express" he means to offer an abstract response rather than direct transcription. Like his New York School colleagues such as Newman, Pollock saw his art alluding to rather than directly representing the atomic age.

Nonetheless, Serge Guilbaut has pointed to the "revealing" painting titles *Eyes in the Heat* and *Shimmering Substance* as evidence that Pollock's first all-over compositions of 1946 "actually represented . . . the Atomic Age," relating them in intent if not actual style to Ralston Crawford's abstract "expressions" of the Bikini blasts that appeared that same year in *Fortune*:

> The same public that was reading about the importance of abstract art and modern art in magazines like *Fortune*, the same people who were being told of the new art's attempts to represent the unrepresentable and to illustrate the unthinkable [in *Fortune*] and who were thereby made ready to accept the unthinkable in their daily lives, were also prepared to accept Pollock's "drippings" without undue astonishment, particularly since Pollock's work at this time (late 1946) was rather close to depictions of fragmentation and disintegration. (Guilbaut 1983, 96)

For Guilbaut, Pollock's early all-over and drip paintings were relatively explicit atomic-age visions that ultimately served to domesticate and naturalize the idea of the unthinkable made real. "What Pollock depicts is a source of energy that is not only powerful but also destructive. What is shown, in short, is not the sun but its equivalent, the atomic bomb, transformed into myth" (ibid., 97). In this view it is no accident that Pollock's artistic breakthrough and rapid rise to success occurred when they did, in the years immediately following Hiroshima and Nagasaki. Regardless of the artist's intent, the context in which Pollock's art came to prominence was one of sudden atomic awareness, and the sense of churning energy in his paintings became a way, in Guilbaut's analysis, to humanize (and thereby accommodate) the atomic bomb itself.

As early as 1943, Pollock's first show had been described as "explosive" (Riley 1943, 18). As Michael Leja has pointed out, however, the term "explosive" would become a veritable "cliché of the critical commentary" on Pollock's painting in the early 1950s, when it took on two overlapping senses (Leja 1993, 198). The painter's

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

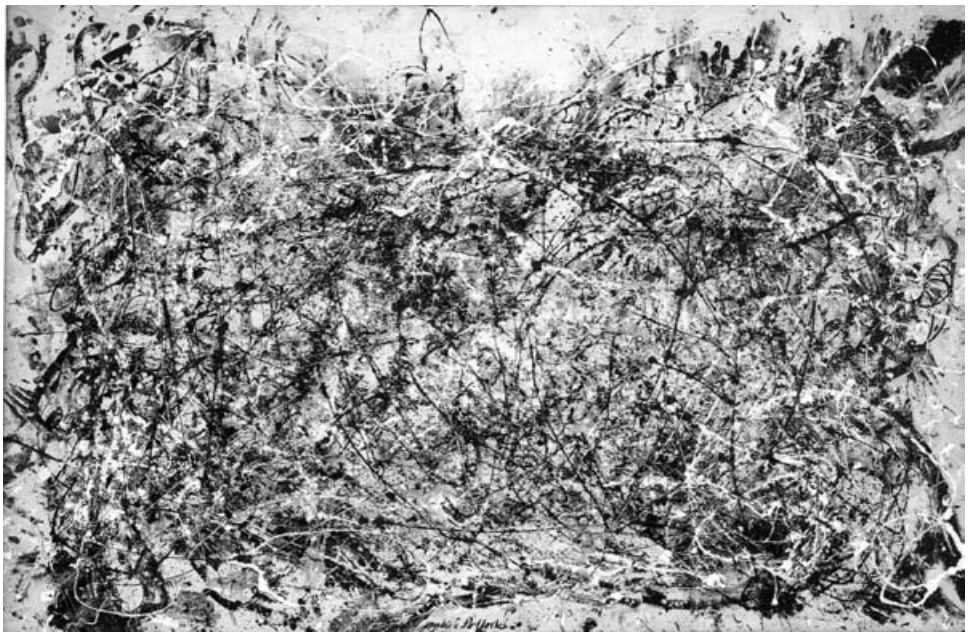


Fig. 4. Jackson Pollock, *Number 1*, 1948, oil and enamel on unprimed canvas, 173 × 264 cm. Museum of Modern Art, New York. © 2004 Pollock-Krasner Foundation/Artists Rights Society (ARS), New York. Image. © The Museum of Modern Art/Licensed by SCALA/Art Resource, NY.

fields of flung and poured paint (fig. 4) referred at once to the turbulent forces of the inner mind, derived from surrealism and Jungian psychology, and to the uncontrollable forces of atomic energy, thereby combining "influential contemporary representations of both nuclear destruction and the unconscious." In Pollock's painting, Leja writes, "These two inscrutable, fearsome powers became blurred, mapped onto common terrain, consolidating somewhat the anxiety they aroused." While critics described Pollock's paintings in terms of "unorganized explosions of random energy" or the "continuous energy of the forces swirling around, through and in all substances," Leja notes that the associations of such language with the unleashing of atomic energy "was seldom explicitly acknowledged or consciously recognized" (ibid.). Given prevailing readings of Pollock's work that focus on either abstract formalism or personal gesture, the connections identified by Guilbaut and Leja, among others, between Pollock's "explosive" canvases of 1946 onward and the sudden onset of the atomic age were initially downplayed or overlooked, at least in the United States. Kristine Stiles has made the argument that this persistent failure to confront what is really at stake in the atomic age represents "dissociative behavior" by artists and critics alike in the face of the numbing reality of mass destruction (Stiles 1992, 94).

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

More recently, T. J. Clark has suggested that Pollock evoked the "nuclear" principally through his dramatic use of scale, which visually collapsed the categories of the very small and the very large:

> It wanted to create the illusion of molecular compression, of course on the verge of turning into its opposite – explosive, destructive force. (Not exploding but reaching critical mass.) Pollock's paintings are profoundly of their time. Serge Guilbaut was right to intuit in them a truly horrifying, truly horrified sense of fusion and fission, small and large, nucleus and particle scatter. (Clark 1999, 29)

Clark suggests that a "certain version of formalism" might find repellent the idea of reducing Pollock's technical breakthrough of the all-over drip painting to an illustrational rendering of atomic force (ibid., 31, n. 17). We should note, however, that the quintessential formalist critic Clement Greenberg himself made an apparently deliberate atomic pun when he wrote in 1952 of Pollock's work, "each picture is the result of the fusion, as it were, of dispersed particles of pigment into a more physical as well as aesthetic unity" (Greenberg 1952, 174). If Pollock's painting is here conceived as the fusion of particles, the aesthetic of the atomic suggested by Greenberg arguably serves to transform and hence neutralize the horror and fearsome power of the bomb and of the potent image of disintegration that Pollock's works might convey and in fact did convey to some of his contemporaries working in Europe.

If, on the whole, American Abstract Expressionism is characterized by such indirect, metaphorical, and mythical allusions to the atomic age, the same and more can be said of the parallel European trend of improvisational, impulsive, gestural abstraction known as *art informel* (un-formal art) or *un art autre* (an-other art), two terms coined by the French art critic Michel Tapié to describe the type of painting that emerged on the heels of World War II. Like Abstract Expressionism, *art informel* challenged both the notional purity of geometric or concrete abstraction and the legible social statements of realist painting. Tapié's broadly conceived "Other" art (which, for him, included the American Abstract Expressionists such as Pollock along with European artists) rejected all known systems and above all rationalism as expressed through the aesthetic of the machine. Aesthetician Renato Barilli has contextualized this widespread anti-technological aesthetic in postwar art in terms of a cultural response both to Nazi atrocities and to the atomic bomb:

> Meanwhile, machinism, with its pride and certainty, had to confront the Holocaust of the Second World War, and, as if that were not enough, that of the atomic deflagration. It might be said that the Other dramatically irrupted and not only in the marginal domain of stylistic research, but so as to reach all of humanity. This irruption changed the terms of the problem. Artists, with their intuition, understood it very well, and the *informel*, accompanied by other tendencies, was the response they proposed. (Barilli 1988, 80)

The *informel* is here attributed to the irruption of the "Other," conceived as mass destruction, into human history. Not just a change in style, it is a direct response to

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

the presence of the unthinkable in the midst of civilization and represents a crisis in the orderly progress of the machine era.

This apocalyptic, anti-technological art was epitomized by the work of Wols (Wolfgang Schulz), an expatriate German living in Paris, whose chaotic oil paintings, begun immediately after the war, have been referred to as "symbols of explosion and disintegration" (Viatte and Cousseau 1982, 149). Heavily scumbled and scratched statements of disorder, they were highly influential on young artists throughout the 1950s, though Wols himself, famous for a dissipated lifestyle, died in 1951. Critic Michel Tapié in 1953 described Wols as the "catalyst of a lyrical, explosive, anti-geometrical and unformal non-figuration" (cited in Morris 1993, 181), while Jean-Paul Sartre, in a well known essay, characterized a work by Wols as a "monument of uncertainty" (Sartre 1965, 39). In 1959, explosiveness and uncertainty combined when the popular German illustrated magazine *magnum* published an article comparing scientific images with works of modern art, featuring a photograph of an atomic blast paired with a Wols abstraction (Gillen 1997, 16). The personal dissolution associated with Wols and manifest in the radical uncertainty of his work could be (and in the picture spread was) linked with the destructive energy of the atom bomb.

But the connection between the new "explosive" painting styles of Pollock and Wols and the nuclear era was made nowhere more explicitly than in two avant-garde art movements of postwar Milan, Arte Spaziale (Spatial Art) and Arte Nucleare (Nuclear Art). These two groups responded self-consciously to the painterly dynamism of Pollock, whose drip paintings were exhibited in Venice and Milan in 1948, and Wols, whose work was exhibited in Milan the following year. At the time, no consistent critical terminology existed to characterize such work, but the artistic freedom, as well as the formal disintegration, implied in Pollock's pouring and flinging and Wols's scumbling of paint would inspire a wave of postwar artists.

Spatial Art was the earlier of the two Milanese movements, founded by the sculptor Lucio Fontana in 1947, based on earlier ideas of his and his students as articulated in the 1946 *White Manifesto*, published in Buenos Aires at the end of Fontana's wartime sojourn there. Drafted by a group of young artists under Fontana's direction, the manifesto called for a new art responsive to recent scientific discoveries, notably the tapping of the atom's energy, that promised to transform humanity: "The discovery of new physical forces, the dominion over matter and space impose gradually upon man conditions that have not existed in all of history." An art adequate to this age would need to make use of these incessant forces: "We seize the energy itself of matter, its need to exist and develop" (Arias et al. 1946).

Upon Fontana's return to Milan in 1947, he launched the Spatial Art movement. Its premise, following the *White Manifesto* and, before that, the proclamations of the Italian Futurists, was that the new material conditions of humanity called for new art forms using new materials. In the succession of "Spatial" manifestos that followed, there is an ongoing emphasis on the positive interchange of art and science. The first Italian manifesto, unsigned and probably dating from late 1947, titled simply *Spaziali* (Spatials),

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

declares, "Artists anticipate scientific gestures, scientific gestures always provoke artistic gestures" (manifesto reprinted in Giani 1957). In response to the threat of nuclear annihilation and the disintegration of matter, the Spatial artists proposed to "release art from matter" through the use of new technologies of aerial communication. In the atomic age pure, disembodied energy would replace the art object.

The first concrete example of Spatial Art was called *L'Ambiente Spaziale di Lucio Fontana*. Unveiled in February of 1949 at the Galleria del Naviglio in Milan, the *Spatial Environment of Lucio Fontana* was a darkened room with suspended pâpier-maché forms that glowed with fluorescent colors under ultraviolet or "black" light. In a review of the exhibit in the Milanese art and architecture journal *Domus*, Lisa Ponti called Fontana's work the "First Graffito of the Atomic Age," focusing on the unprecedented but still primitive nature of Fontana's endeavor as a new kind of art form (Ponti 1949, 44). Thus conceived, the atomic age paralleled or reflected in reverse the stone age.

Fontana's art consistently tested the boundaries of the object, even in relatively modest works such as the ceramic plates that he exhibited at the ninth Triennale di Milano held in summer of 1951. Fontana had produced a number of "spatial" plates for the ceramics pavilion, including one featuring a coil of wire projecting into space, as if the spiral design on the plate had pushed into another dimension (fig. 5). Of Fontana's plates Gio Ponti wrote in *Domus*, "what matters in these [works] is the intent – polemical, be it negative or via absurdity – just to leave behind, in a single leap, the habitual rules of ceramics like those of painting and of sculpture, demonstrating that art doesn't evolve but can, all in a stroke, like science (classical physics, modern physics, atomic physics) totally change presuppositions." Ponti saw in Fontana's abrupt juxtaposition a deliberately controversial presentation, by the artist, of the old against the new. The plates by the "spatial" Fontana had, he said, "nothing to do with the old ceramics, with the old decoration, with the old and illustrious beauty." In their utter contemporaneity, suggested Ponti, the "spatial" plates might even be called "'atomic'" (Ponti 1951, 37–38). The "atomic" here became a sign for abandoning tradition altogether and taking a leap into the unknown, analogous to the leaps of twentieth-century science.

Fontana was at this time joined in his Spatial enterprise by Gianni Dova and Roberto Crippa, both painters who adapted the enamel drip technique of Pollock to a more overt atomic imagery – Dova's the fireball and Crippa's the atomic diagram. Dova had been a geometric abstractionist who in 1951, reportedly swearing "only by Wols and Pollock" (Sauvage 1962, 20), began making enamel pour paintings bearing the title *Composizione nucleare* (Nuclear Composition). These and subsequent *informel* works by Dova combined the material fluidity of Pollock with the disintegration of form and structure found in Wols (fig. 6). In 1959 Lawrence Alloway identified the way in which

> Dova's paint takes its form by flow, trickling, pressure, impact, aided by the artist. By this means he discovers pictorial structures. Out of his dense coagulative material metaphors arise that connect in a generally allusive way with microscopic photographs or the incandescent centre of an atomic explosion, the fire ball. (Alloway 1959)

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

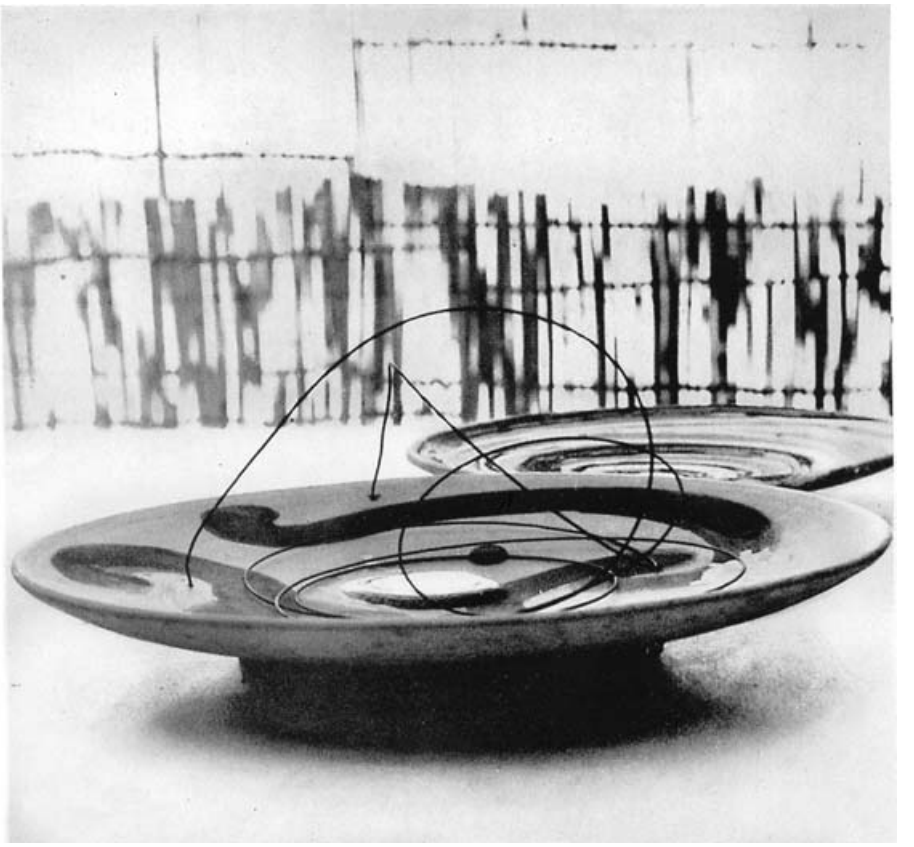


Fig. 5. Lucio Fontana, *Spatial Concept: Plate* ("Atomic Plate"), 1951, iron wire and glass paste on terracotta, 35 cm. © Fondazione Lucio Fontana, Milan.

Dova's technique was intuitive, yet always focused outward, his material manipulation resulting in an imagery of contemporary life as it was being redefined by science. With both the limits of perception and the limits of power expanding rapidly, Dova's image of the "nuclear" tested the very boundaries of representation. As Alloway noted, Dova's paintings had a kind of iconography that was both amoebic and atomic in its references, while possessing the delirious, explosive paint quality that critic Michel Tapié described as following from Wols.

A friend of Dova's, Roberto Crippa was a former fighter pilot who had turned to painting. Working at first in the concrete-abstract style, Crippa, like Dova, looked increasingly to Pollock and began to produce drip paintings that resembled cosmic or microscopic images. Alloway would refer to Crippa's work as an "optimistic, confident response to the Atomic Age":

> His imagery is linked with the pouring techniques of Jackson Pollock. However, unlike Pollock's drip paintings, Crippa's line is of even thickness and has, as a rule, regularity of

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

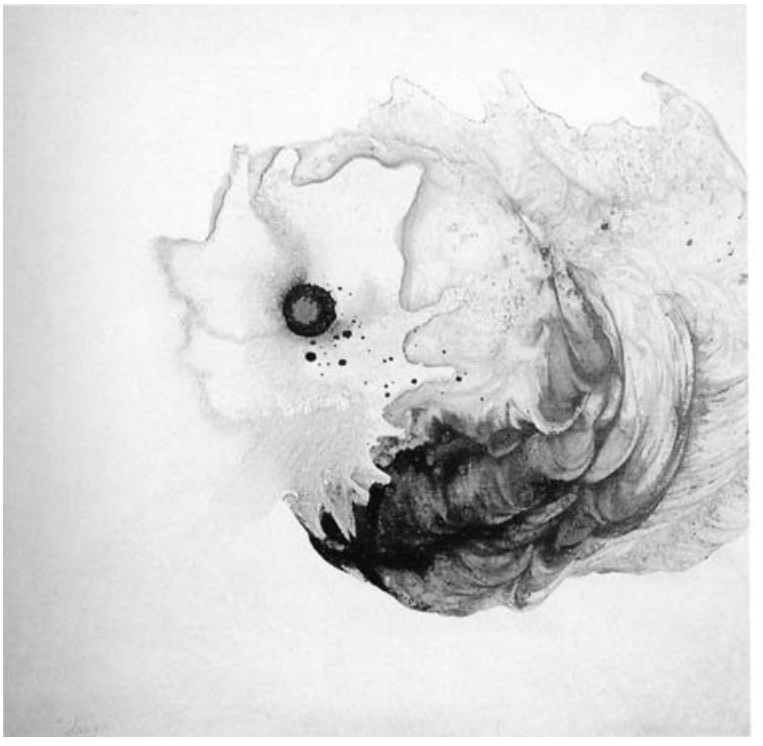


Fig. 6. Gianni Dova, *Spatial Composition no. 11*, 1952, oil on canvas, 100 × 100 cm. Galleria del Cavallino, Venice.

> direction. His skeins of paint resemble orbits, so that even when they leave the canvas their continuation is computable, like a comet visiting the solar system whose return can be predicted from its course. These forms of Crippa's are closely analogous to symbols for atoms; not the abrupt, random forms of cloud-chamber photographs, but the criss-crossing ovals of diagrams of electrons circling a nucleus. His flowing graphism is not only an elegant record of the physical movement of the artist's hand, but a symbol of the motion of atoms. (Ibid.)

Like Dova, Crippa interpreted Pollock's visceral line as a sign for atomic energy. In contrast to Dova's fireballs, however, Crippa's force was coordinated and orderly, rendering Pollock's chaos as the organized swirl of particles in subatomic space (fig. 7).

Dova and Crippa were among six painters exhibiting in a group show of Spatial Art held in Milan at Carlo Cardazzo's Galleria del Naviglio in February of 1952. Fontana here exhibited for the first time his novel pierced paintings, the *Spatial Concepts*, which were lit from behind with colored lights to dramatize their physical engagement with energy itself. Despite a variety of styles on view, the Spatial painters all shared an intuitive and free approach to their use of materials. Their common goal, articulated

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

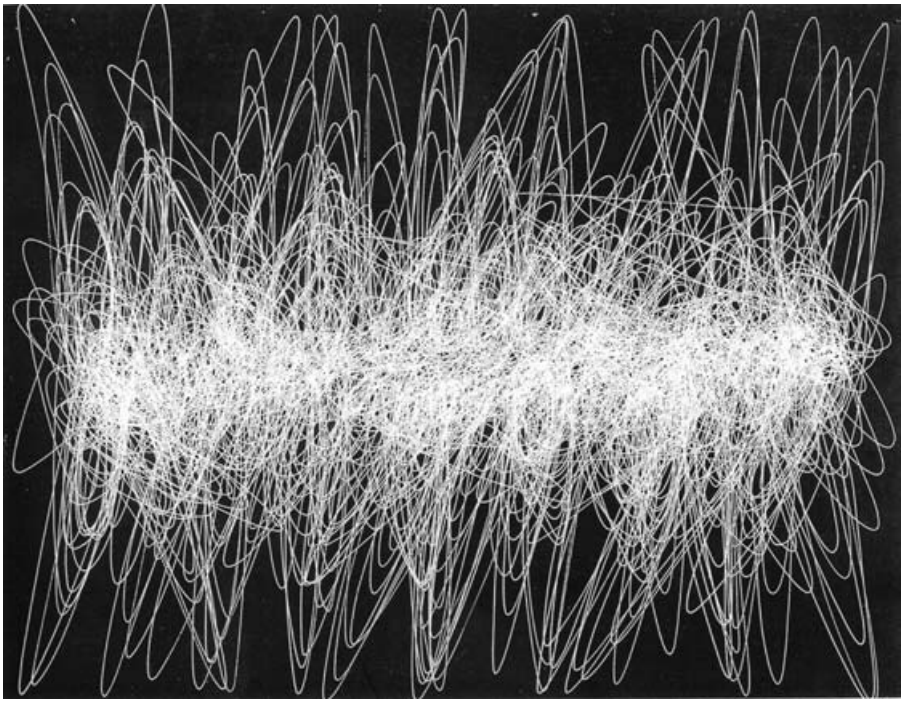


Fig. 7. Roberto Crippa, *Spirals*, 1951, oil on canvas, 160 × 200 cm. Private collection.

in a *Manifesto of Spatial Art* dated 26 November 1951 (reprinted in Giani 1957), was "to represent figuratively" energy itself in space, freed from matter.

Immediately following the Spatial Art exhibit, the dealer Cardazzo announced an artistic competition with a prize of 100,000 *lire* to be awarded to the painter who could best render, on canvas, the new theme of atomic force. Premised on the notion that "the explosion of the first atomic bomb and the successive spread of the discovery of nuclear energy have inspired in artists visions until now foreign to painting," the *Premio Gianni* (named for sponsor Virgilio Gianni) was designed as an "'exhibit-competition' . . . for artists who work in the spatial and nuclear climate." For the competition, the announcement stated, "a commission will choose from among the exhibited works that one which most intensely communicates a new sense of the discovery that initiated the atomic age" (Announcement 1952). Participation in the "exhibit-competition" was by invitation only, with the unstated goal being to showcase the new Spatial Artists and generate publicity for their efforts. In this it succeeded remarkably well. The show traveled to Cardazzo's gallery in Venice, where it received considerable notice, culminating in its coverage in *Time* magazine in 1952.

The *Time* review began: "How should a modern artist react to the atomic age? In Venice last week, 13 Italian painters who call themselves 'spatialists' and 'nuclearists'

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

[sic] gave their answer with an exhibit 'inspired by the atomic bomb.'" The reviewer called the paintings "almost as explosive as the bomb itself: furious fireballs of bright colors and bold contrasts." Dova was the winner of the competition with a painting that *Time* described as a "churning blue and green fantasy." *Time* also reported on Fontana's submission to the exhibit, a "spinning, nebular mass perforated with hundreds of tiny holes and lighted from the back." Fontana, said the article, "foresees a day when vibrating images and even smoke will be televised as art. 'For me,' he says, 'painting within a frame is dead, and sculpture as we know it is dead'" ("Outside" 1952, 73). Traditional art forms perished in the atomic age, as energy became the material of art.

In the statement of premise for the exhibit, Cardazzo began by invoking the first atomic test blast and its tragic aftermath: "On July 16, 1945, in Alamogordo, New Mexico, the first atomic bomb is tested. Twenty days later, Hiroshima is destroyed. Twenty-three days later, Nagasaki also knows the horrors of atomic war. The act of birth of the atomic age is fringed with mourning" (Cardazzo 1952). But the Spatial Artists meant to find cause for affirmation in the wake of destruction. Cardazzo went on to invoke Albert Einstein's 1931 publication *Cosmic Religion*, which argued for the necessary role of artists and scientists in keeping alive a religious feeling amidst ground-shaking scientific discoveries (see Einstein 1931). For Cardazzo, the Spatial Artists thus fulfilled an important psychological function vis-à-vis science: "In an age when the conquests of physics are going beyond the limits established by science itself before the atomic conquests, artists too are looking into the new images of matter in search of incentives to inspiration in the consciousness of the new age" (Cardazzo 1952). The atom could be a source not only of devastation but also of inspiration. Science could join artists in a new cosmic quest. The paintings in the "atomic bomb" exhibit accordingly offered visions of energy and light in space. Overall, Cardazzo's "atomic bomb" show attracted a large audience and became an exemplary *succès de scandale*. "During the first week," wrote *Time*, "4,000 crushed in for a look at the atomic fireballs and glowing pinholes" ("Outside" 1952, 73).

Conspicuously absent from Cardazzo's "atomic bomb" show were the members of the contemporary Milanese painting group devoted to the idea of Nuclear Art. The previous November, an exhibit at the Galleria San Fedele in Milan, featuring the work of two young Milanese painters, Enrico Baj and Sergio Dangelo, had been provocatively titled *Pittura Nucleare* (Nuclear Painting). Baj and Dangelo made dripped and poured enamel paintings similar to Dova's (whom they knew and to whose *Nuclear Compositions* they had in fact responded). The Galleria San Fedele belonged to one-time Spatial Movement member Giorgio Kaisserlian, who may have suggested the name "nuclear"; there was also a slightly earlier use of the term "nuclear painting" in the 1950 *Manifesto della pittura e plastica nucleare* (Manifesto of Nuclear Painting and Plastics) by Futurist "aero-painter" Fortunato Depero (see Sega Serra Zanetti 1994, 140, n. 16). In February of 1952, on the occasion of Baj and Dangelo's second show of Nuclear Painting, held in Brussels, they issued (in French) a *Manifesto of Nuclear Painting*, in which they pronounced their "desire to demolish all the 'isms'" of painting,

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

to "reinvent" painting altogether. "Forms disintegrate," the manifesto said: "man's new forms are those of the atomic universe." It declared: "Truth no longer belongs to you: it is in the ATOM. Nuclear painting documents the search for this truth" (Sauvage 1962, 203). Nuclear art emerged as a rival movement to Spatial art, despite numerous similarities between them.

Nuclear Painting, like the painting associated with Spatial Art, used fluid painterly gesture and blots and spirals to produce a cosmic figuration. Loosely alluding to scientific imagery, both Spatial and Nuclear Artists sought to express (or, as Baj and Dangelo put it, to "document") the new physical and psychological realities of the atomic age. Baj and Dangelo, like the Spatial Artists, insisted on the necessity of both free material experimentation and the presence of a contemporary subject matter reflecting the new nuclear era.

But although in point of style and technique the two Milanese movements were closely parallel, developing in tandem and frequently referred to, in retrospect, as a single stylistic trend (see Sega Serra Zanetti 1994, 127–44; also Alinovi 1983, 35–39), Nuclear Art offered a much more satirical vision of the atomic age than did Spatialism. The Nuclear Artists took a far less optimistic view of the nuclear future, as evidenced by their repeated use of the damaged or mutated human figure and the recurring motif of the mushroom cloud. Indeed, the characteristic motif of Baj's work of the early 1950s was the "nuclear man," a graphic conflation of a mushroom cloud and the eviscerated head and neck of a person formed from dripped enamel paint. As an example of the Nuclear Artists' all-important concept of "prefiguration," Baj's viscous humanoids and skulls with a single cyclopic eye-socket appeared to be either disintegrating or coming into being in a toxic environment. An early example, the ironically titled *Immaculate Conception* of 1951, depicts a milky white creature, appearing to have three eyes, growing from an ill-defined landscape (fig. 8). These images of biological mutation in a toxic environment represented a critical ambivalence toward the atomic future in contrast to the transcendent vision of the Spatialists.

A large-scale group exhibit of Nuclear Art was held in Milan at the Amici della Francia in May 1952, within weeks of the Spatialists' "Atomic Bomb" show. Among the participants was Enzo Preda, whose *In Order to Forget Hiroshima* depicted a mushroom cloud made from Pollock-inspired dripped enamel paints in garishly contrasting colors. In such examples Nuclear Art confronted the horrific and irrational aspects of the atomic age through raw painterly gesture. The ultimately uneasy relation of Nuclear Art to science was revealed at the opening for the exhibit, as recounted by Arturo Schwarz: "Present in the room was the holder of the Chair of Physics at Milan University, Professor Polvani, who at a certain point fled in horror, dismayed by the 'scientific' theories of the painters" (Sauvage 1962, 30). Nuclear Art was in many respects an attack on scientific rationalism, which, in the view of the artists, had given birth to unnatural offspring.

In 1952 Baj painted the *Manifesto Bum* (Boom Manifesto), featuring a black mushroom-cloud-shaped head against an acid lemon background overlaid with nuclear slogans and formulas. Among them it declared, "The heads of men are charged with

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

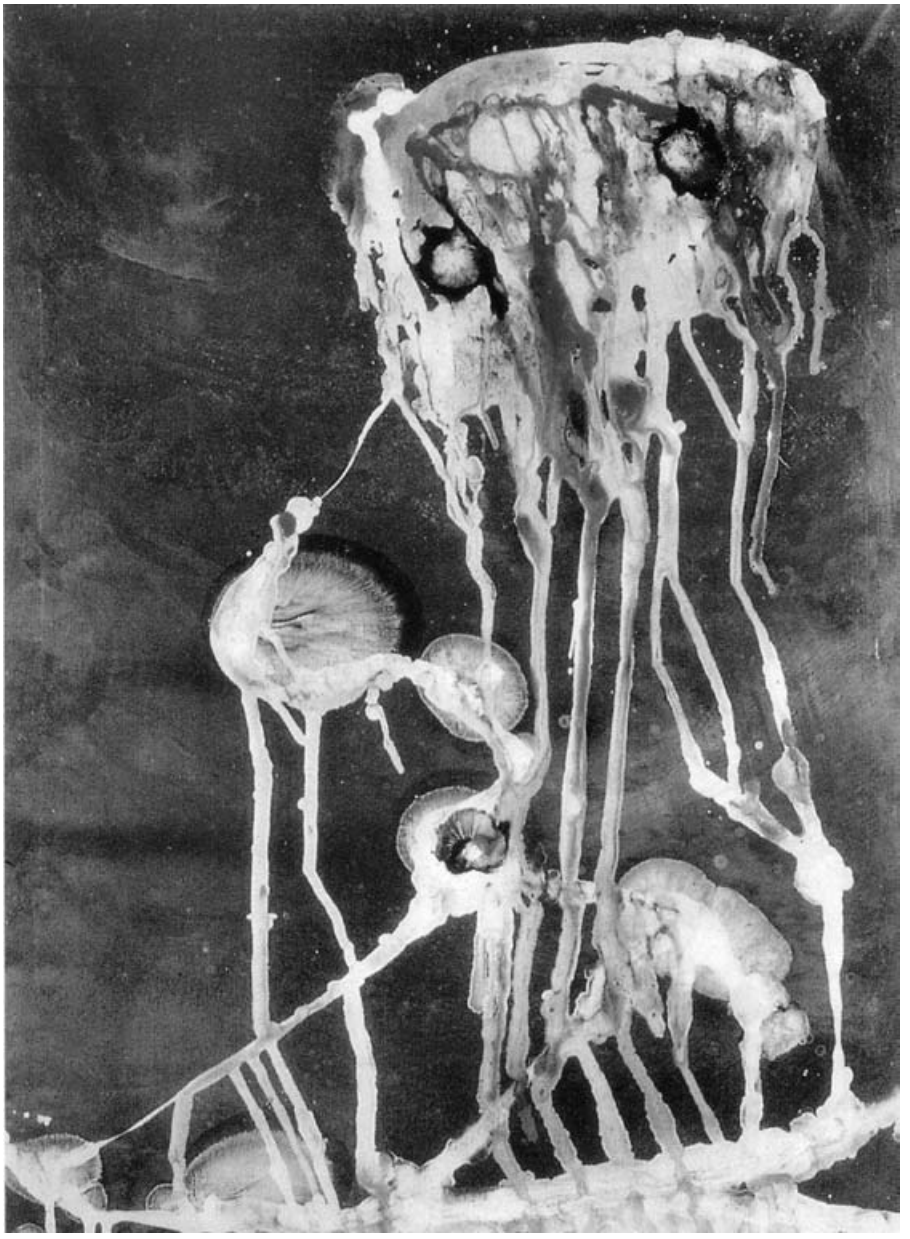


Fig. 8. Enrico Baj, *Immaculate Conception*, 1951, oil and enamel on canvas, 100 × 70 cm. Private collection.

explosives/every atom is exploding" and "thought=force/forces are electrical charges." The atomic age engendered explosive thoughts as the mind itself became the site of nuclear reactions. As Giorgio Kaisserlian wrote in his introduction to the May 1952

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

Nuclear exhibition catalogue: "Matter has more imagination than ourselves." The physical world had been shown to be more turbulent even than the artist's imagination, and it was only by free experimentalism that one could hope to represent this world: "The problem of perspective in painting was born of a dialogue with the objective world of classical physics," Kaisserlian wrote. "What, then, may be born of an uninterrupted dialogue with nuclear reality?" (Sauvage 1962, 29). Unbeknownst to the Nuclear Artists, this question had already been posed by Salvador Dali, who had announced his turn from expressing the tumult of the inner world to that of the outer world in response to the atomic bomb, and who had developed his aesthetics of disintegration. When the Nuclear Artists came to learn of Dali's Nuclear Mysticism they responded with alarm, Dangelo writing to Baj, "The Nuclears are in danger! In a newspaper appearing in Madrid and of which I hope to obtain a copy, Salvador Dali declared in an interview that upon returning to America he will begin NUCLEAR painting" (Dangelo to Baj, n.d., in Corgnati 1999, 100). Baj reportedly sued Dali in Italian court in 1953 for infringing on the idea of nuclear art (Dali 1990, 215), though it is not clear that Dali himself had known anything about the Nuclear group.

Under Baj's loose leadership Nuclear Art became an increasingly international movement in the 1950s. In 1957 some twenty-five artists from a half-dozen countries issued a new manifesto of Nuclear Art, a polemic called *Against Style*. It envisioned the evolution of modern art in terms of the progressive elimination of convention as in a chain reaction:

> In former times impressionism liberated painting from conventional subjects; cubism and futurism in their turn got rid of the imperative of objective imitation and then came Abstraction to dissipate every residual shadow of an illusory necessity of representation. The ultimate link in this chain is being destroyed today: we Nuclears today denounce the final of conventions – style. (Sauvage 1962, 209)

Here the idea of the "nuclear" was invoked to support the annihilation of style, an idea that contributed to the surge of monochrome, conceptual, and kinetic art forms in the 1960s.

A similar conclusion had been arrived at from a different direction when in spring of 1951 in the Paris-based art magazine *Art d'aujourd'hui* the abstract sculptor Etienne Beothy attributed to the discoveries of atomic science a breakthrough in the conception of space and time. "Before the 'atomic' age," he wrote, "it was thought that matter was inert by 'nature' and it was imagined that there was a divine flicker that had put everything into movement. The new age begins with the apocalyptic discovery: all is an ocean of whirlpools and radiation" (Beothy 1951, 10). These were cosmological implications, which for the artist meant the necessary collapse of gesture and structure, of movement and form. Looked at in a positive way, the unlocking of energy within matter leads to the idea of kinetic and light-based works of art, which incorporate energy into their very structure. As Sidra Stich has pointed out, this optimistic view

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

of science and technology saw the atomic age as one of rapid artistic innovation, "comparable in fact to the cubist-futurist period, which similarly coincided with major breakthroughs in the field of atomic physics" (Stich 1994, 85).

The embrace of the atom as an emblem of postwar progress was nowhere more evident than at the 1958 World's Fair, held in Brussels. Devoted to the harmonious relation between "Scientific Civilization and Humanism," Expo 58 took for its symbol the atom (ibid., 267, n. 66). Just as the 1889 Paris Exposition Internationale had featured the Eiffel Tower, so the Brussels Exposition was dominated by the Atomium (fig. 9), a 100-meter-tall, stainless-steel model of a molecule that towered over the fairgrounds, offering a view as well as educational exhibits on nuclear energy (Friebe 1985, 165). The atom here signified a new source of unlimited energy for a world at peace. This positive image of the atom had two years previously been the subject of Walt Disney's book and animated cartoon, *Our Friend the Atom*, where the genie of atomic destruction was given a second chance and reemerged as a force for peace – an idea that parallels the Atoms for Peace movement of the mid-1950s (see Hadler 2001). More broadly the Atomium stood as a cultural symbol. As the Eiffel Tower had celebrated machine-age engineering, so the Atomium (which can still be visited today) declared that the atomic age had arrived.

Among the visitors to the Brussels Fair was the young French artist Yves Klein, who had himself participated briefly in Arte Nucleare the previous year, signing the 1957 Nuclear manifesto *Against Style*. Klein had recently made a name for himself as a monochrome painter with his series of identical "propositions" – panels covered with radiant blue pigment, the quintessential "all-over" paintings, which he first showed in Milan in January 1957 and which the Nuclear manifesto *Against Style* had deemed "the last possible forms of stylization . . . after which nothing is left but the *tabula rasa*" (Sauvage 1962). As if to exemplify this final break with style, which moved beyond the signature work of art, in the spring of 1958 Klein held his infamous exhibit *Le Vide* (The Void) in Paris, consisting of the Galerie Iris Clert emptied out and painted white. Ostensibly an example of Klein's mediumistic ability to create a pictorial ambience by freely projecting his monochrome sensibility, *The Void*, in its emptiness and its use of strategic annihilation, also made metaphorical reference to the emptiness of nuclear obliteration.

In this respect Klein argued that he was uniquely an artist of the atomic age. In his tract entitled "My Position in the Battle between Line and Color," which was dated two weeks before the opening of *The Void* and in a sense served as an apologia for the exhibit, Klein identified *materialism* as the central problem of his time, a direct result of the dematerializing potential of the atomic bomb:

> I am happy to be dealing with a problem that is so much of our time. One must – and this is not an exaggeration – keep in mind that we are living in the atomic age, where everything material and physical could disappear from one day to another, to be replaced by nothing but the ultimate abstraction imaginable. (Klein 1973, 10)

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press



Fig. 9. Atomium, Universal Exposition, 1958, Brussels. Postcard, collection of the author.

As nuclear disintegration, the "ultimate abstraction" had become a real possibility. Klein's investigations into the dematerialization of art in *The Void* therefore claimed a momentous real-world parallel in scientists' research into the dematerialization of matter.

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

Soon thereafter Klein drafted a letter to the International Conference on the Detection of Atomic Explosions in which he proposed "to paint in blue the A and H bombs," so that the explosions and their fallout would have a tell-tale color, detectable by all interested parties. Klein's proposal required that he be notified of the "location and number of the A and H bombs" and compensated both for the cost of supplies and for his "proper artistic share" (Stich 1994, 147). He concluded his letter with echoes of Dali's Nuclear Mysticism: "Do not think, however, that I am one of those who makes art follow matter. Quite the contrary, the disintegration of matter will give us the most extraordinary monochrome realizations that humanity – and I dare say the cosmos – will have ever known" (ibid., 148). Following Dali, Klein, whose close friend Robert Godet had published Dali's nuclear-themed *Mystical Manifesto* in 1951, was appropriating the atomic and hydrogen bombs into his own artistic program with arguably absurd results.

Klein had traveled in Japan in the early 1950s, and a friend he met there, Shinichi Segi, tells how Klein was deeply impressed by a film on the subject of the "shadow" of a human figure burnt onto a Hiroshima doorstep by the atomic blast. The resulting image, the trace of a vaporized human being imprinted into stone, "influenced and incited" Klein to make the series of body imprints and silhouettes that he called *Anthropometries* (Segi 1983, 84). Klein, who only occasionally gave specific titles to his works, called one of the body prints, a well known large-scale example from ca. 1961 featuring ghostly silhouettes, *Hiroshima* (fig. 10). Here his signature color International Klein Blue, applied with an atomizer, intimates the radiation blast itself, leaving ghostly shadows around absent figures. Implicit in Klein's work, which resembles a photographic imprint, is the moment of the blinding flash itself. The result is a "sun drawing" made not by the sun but its atomic substitute.

The Düsseldorf-based Group Zero was initially inspired by Klein's monochromes and subsequently by the scope of his public activities. The group's name, while referring idealistically to the "moment of a rocket's lift-off," also inevitably made reference to Ground Zero, the absolute center of a nuclear blast. Like the Italian Spatial Movement, one of its primary sources, Zero was premised on the use of technology for purely expressive ends. In a theoretical essay entitled *Paths to Paradise*, group co-founder Otto Piene asked:

> Why do we not pool all human intelligence with the same security that accompanies its efforts in times of war and explode all the atom bombs in the world for the pleasure of the thing, a great display of human inventiveness in praise of human freedom? As a spectator of this astronautic theater, man would not have to take cover, he would be without fear, free, not bound by purpose. (Piene 1973, 149)

Detonating atomic bombs could be made into aesthetic spectacle in Piene's scenario, which he insisted was not utopian but real. Such a transcendent display would free man of the need to "take cover" in the atomic age, a clear reference to cold-war era concerns about nuclear war.

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

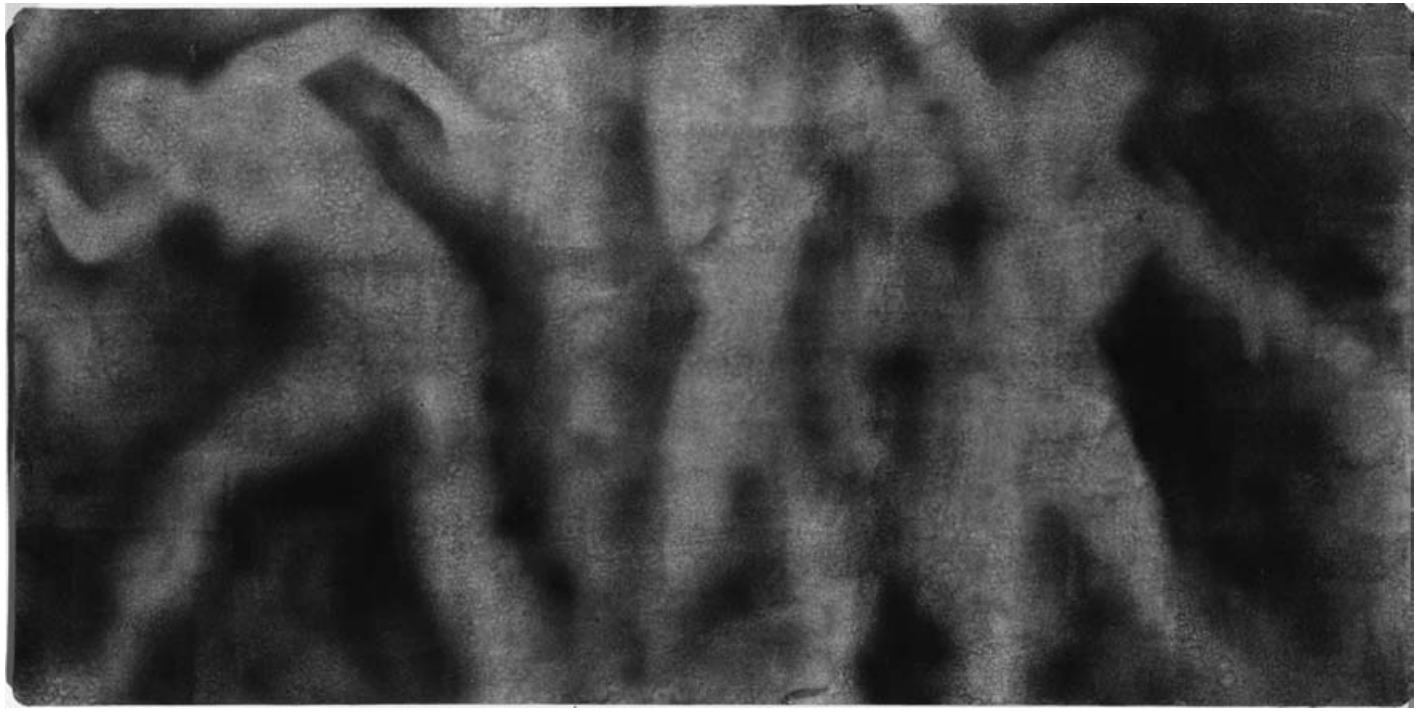


Fig. 10. Yves Klein, *Hiroshima* (*Anthropometries 79*), c. 1961, synthetic pigment on paper, 139.5 × 280.5 cm. Menil Collection, Houston. © 2004 Artists Rights Society (ARS), New York/ADAGP, Paris. Photo: Rick Gardner.

The proposal to make of the atom bomb an extravagant artistic expression was both extremely idealist and satirical, and it spoke to the distance that artists felt from the fateful undertakings of government-sponsored scientists. As Umberto Eco and G. B. Zorzoli have written, "With the Manhattan Project a new era opened in the history of mankind: it was not only the atomic era with all its scientific and moral implications, but, even more important, it was an era that saw collaboration beginning on a national scale between scientists, once isolated in their laboratories, and the political and economic forces of the country" (Eco and Zorzoli 1963, 322). Artists with their own researches risked remaining marginalized from larger political and economic forces, and the need that artists felt to adjust their work or otherwise react to the atomic age could inadvertently call attention to their irrelevance. Increasingly, as a result, artists sought ways to rival the visibility and cultural impact of massive science projects and thereby claim a critical role in contemporary society.

This is perhaps nowhere more evident than in the series of elaborate and spectacular self-destructive constructions executed from 1960 to 1962 by the Swiss artist Jean Tinguely, a close friend of Yves Klein and himself a participant in the Zero Group. In 1960 Tinguely unveiled his first "destructive construction" in the sculpture garden of the Museum of Modern Art in New York. Entitled *Hommage à New York*, the elaborate piece, assembled from hundreds of mechanical components, slowly collapsed under its own actions, catching fire amidst great smoke and noise. Disintegration was not only the subject but the medium itself, both ends and means.

Tinguely would go on to make two more self-destructing machines in the early 1960s, each more spectacular than the last. *Study for an End of the World*, held on the grounds of the Louisiana Museum in Humlebaek, Denmark, on September 22, 1961, was dubbed by the artist an "autodestructive-dynamic-and-aggressive-monster-sculpture." It included an elaborately timed sequence of twenty-one operations taking place among a half-dozen large structures arrayed on the museum's lawn overlooking the Baltic Sea (a frontier, in a sense, between eastern and western Europe). Beginning with the release of a living white dove, which Tinguely called the "dove of peace," the sequence was to conclude with fireworks and powerful dynamite explosions, suggesting a spectacular doomsday device (fig. 11). In fact, the explosives went off prematurely, with a greater impact than Tinguely anticipated, resulting in two people being injured. Afterwards, in an unintended irony that provoked an angry reaction in the popular press, the dove of peace was found dead amidst the rubble, accidentally killed in the explosions (Hultén 1975, 217).

The opening sequence of *Study for an End of the World* consisted of five operations, culminating with the firing into the sky of a doll representing the Soviet cosmonaut Yuri Gagarin (whose pioneering space flight had taken place less than six months before). The launch of the Gagarin doll was followed, after a pause, by a profusion of white smoke. In notes for the piece, Tinguely describes this initial portion of the event as establishing an "atmosphere of farce" (*ambiance de farce*) and parody. The second part of the piece would feature the "aggression and terror," "raging," and "destructive

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press



Fig. 11. Jean Tinguely, *Study for an End of the World*, 22 September 1961, mixed media and explosives, Louisiana Museum, Humlebaek, Denmark. © 2004 Artists Rights Society (ARS), New York/ADAGP, Paris.

atmosphere" of the rockets and dynamite (ibid., 219). The tension of the transition from humor to threat – from an astronaut doll fired into the air to violent TNT detonations that caused audience members to recoil – was integral to the effect of Tinguely's auto-destructive machines.

Some six months after the first *Study for an End of the World*, Tinguely, who envisioned his self-destructive spectacles as natural subjects for television news coverage, successfully contracted with the American network NBC to produce his third (and final) auto-destructive work, *Study for an End of the World, No. 2*. Planned for telecast on an episode of *David Brinkley's Journal*, this spectacle was on a larger scale and used even more powerful explosives than the previous ones. Tinguely located the work in the American desert outside Las Vegas, not far from the Nevada Test Site. Lenient laws in Nevada allowed him to purchase hundreds of pounds of dynamite for the project. Among the items to be detonated by Tinguely were a toilet, an oil-tank painted in International Klein Blue, and, most spectacularly, a refrigerator packed with feathers and dynamite, held atop a 25-foot pole. The explosives were rigged with chemicals that would create immense clouds of colored smoke, suitable for color broadcasting. The remote location had been chosen partly with safety in mind, the quantity of

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

explosives precluding a live audience. Instead, American television offered Tinguely the prospect of an uncommonly large and safely distant group of viewers. Television cameras were set up to record the entire sequence of operations and explosions, and Tinguely and assistants, wearing hard hats, worked from a control panel at a distance from the sculptures themselves. *Study for an End of the World, No. 2* was held on March 21, almost two years to the day after *Hommage à New York*. In that time, Tinguely had literally moved his exhibition venue from an art museum to the desert, and to a slot on American network television.

As with the earlier self-destructive works, things did not go exactly as planned with *Study No. 2*. A sole generator, responsible for powering the machines and the television cameras, could not supply enough electricity. In the end many of the machines failed to perform their actions, and the television cameras were not able to record everything. The detonations were spectacular, but when the final charge failed to go off as planned, Tinguely himself ran into the smoke and flames to set it off. As documented in a dramatic photograph, the artist barely escaped before the final blast (ibid., 239). This was the last such self-destructive work made by the artist, who felt he had pushed his absurd idea – using extreme violence to parody the aggression of technological civilization – to its limit.

In April of 1962 the *Saturday Evening Post* ran an illustrated article on Tinguely called "Wacky Artist of Destruction," focusing on the three self-destructive works culminating with the *Study No. 2*. Interviewed for the article, Tinguely assumed the role of an advanced researcher: "I'm trying to meet the scientist a little beyond the frontier of the possible, even to get there a little ahead of him" (Byron 1962, 78). Claiming "anything is possible," the artist portrayed himself taking back from the scientist the leading-edge position in Western society. His ultimate goal, he was quoted as saying in the *Saturday Evening Post*, was to carry absurdity to such limits that "its effect is to make conventional values ridiculous, cast some badly needed doubt on this 'wonderful age' we're living in." Their uncertain danger mimicking the threat of nuclear destruction, Tinguely's self-destructive machines were violent slapstick for the atomic age, made-for-media spectacles that used illogic to criticize the rationale of contemporary civilization. Said Tinguely, "it's like a lunatic end to everything monstrous in the world" (ibid.).

Tinguely's destructive constructions have a suggestive if uncertain relation to the ideas of his contemporary Gustav Metzger, based in London, who in 1959 (the year before Tinguely's *Hommage à New York*) proposed his own notion of "auto-destructive art" as a strategic response to the atomic age. Auto-destructive art, which Metzger articulated in a series of manifestos from 1959 to 1961, was premised on the idea that the work of art should contain the means of its own material destruction, thereby dramatizing the investment of Western civilization in processes of annihilation. (Kristine Stiles, the preeminent historian of Metzger's work, has pointed out to me that Tinguely, who developed a similar concept, had been in London in November 1959 and would have had the opportunity to learn of Metzger's ideas, though in correspondence

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

with her he denied knowing about Metzger until some time later [Jean Tinguely letter to Kristine Stiles, 13 February 1986]). According to Metzger, "Auto-destructive art demonstrates man's power to accelerate disintegrative processes of nature and to order them" (Metzger 1961). The artist poetically likened auto-destructive art to the "drop drop dropping of H H bombs" (ibid.). This satirical aestheticization of nuclear destruction, by means of autodestructive art, was ultimately, Metzger said, "an attack on . . . the drive to nuclear annihilation" (ibid.). Art could only adjust to the atomic age, Metzger suggested, by internalizing destruction.

Metzger encouraged artists to collaborate with scientists and to make use of novel artistic materials such as "Explosives," "Nuclear energy," and "Radiation" (ibid.). Whereas the Italian Nuclear Artists, inspired by the "explosive" abstractions of Pollock and Wols, had declared in 1952 that "forms disintegrate" in the atomic age, Metzger's auto-destructive art made the disintegration of form a literal proposition by incorporating corrosive or explosive materials into the very structure of the work of art. Stephen Bann identified "destruction" as one of the "paths of experiment" in modern painting, a trend he dates to the Romantic movement of the early nineteenth century and sees culminating with the auto-destructive art of Metzger. According to Bann, the early inspiration for Metzger was Jackson Pollock but Metzger departed from Pollock in a critical way by abandoning the traditional materials of painting along with the notion of the artist expressing himself (Bann 1970, 60).

> The cardinal difference . . . lies, of course, in the complete transfer of destructive energy from the artist to the material. The artist no longer needs to "twist himself" – to delve into his own psychology – in order to release the destructive forces. He simply allows himself to be the channel through which these destructive forces are communicated to the public. (Ibid., 62)

Metzger's process did away completely with aesthetic oppositions of social realism versus abstraction or technology versus intuition. As the disintegration of form, auto-destructive art ran counter to the prevailing formalism in art, satirizing the ideals of modernism as progress (see Davis 1973, 64), by embracing an actual aesthetics of destruction. Beyond attempting to "express" the compulsion to disintegration, as Ralston Crawford had said about his abstract compositions in 1946, Metzger's auto-destructive art signaled disintegration itself as a timely – even necessary – form of expression in the atomic age.

While Metzger only rarely executed his autodestructive works in performance, his theories were nonetheless influential. Among those most visibly impacted by Metzger's ideas was guitarist Pete Townsend of the Who, who as an art student attended a lecture by Metzger in 1962 and later adopted the infamous practice of dramatically smashing his own guitar in performance (Stiles 1996, 903, n. 3). In 1966 Metzger organized the Destruction In Art Symposium, an extended series of art activities, events, and "happenings" ranging from performance works to poems to

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

multi-media light projections, along with lectures and discussions (see Stiles 1987). In the press release for the symposium, Metzger declared, "The cataclysmic increase in world destructive potential since 1945 is inextricably linked with the most disturbing tendencies in modern art" (Mellor 1993, 41). Among the many artists who participated in or contributed a work to the DIAS was the Milanese Nuclear Artist Enrico Baj, an early proponent of destruction in art (Stiles 1998, 274). Ad Reinhardt, the American abstractionist who had two decades earlier raised the issue of "painting's adjustment to the atomic age," also submitted a poem to the symposium (see Reinhardt 1991, 69–70). Reinhardt had, in the interval, undertaken his ongoing series of radically reduced "black paintings" (which said nothing about the atomic age precisely because Reinhardt believed that art could say nothing). Inaugurating the third decade of art in the atomic age, the wide-ranging DIAS was a watershed event in the history of what Kristine Stiles has dubbed "destruction art," using the human body as medium to, as Stiles has put it, "express the corporeal threat at the very base of social and political experience" (Stiles 1987, 29).

If, early in the century, Kandinsky's understanding of the atom's divisibility had caused him to doubt external reality and to turn inward to discover an abstract form of personal expression, the fearful revelation of the atomic bomb seems to have had an opposite effect on postwar artists: now, as *Time* magazine said of the Spatialists' 1952 "Atomic Bomb" exhibit, "outside is everything," or as Dali said in 1959, "the exterior world – that of physics – has transcended the one of psychology." The idea formulated by the Milanese Nuclear Artists that "matter has more imagination than ourselves" suggests that with the atomic bomb and the tapping of atomic energy, the Romantic era of subjective self-expression, even as it reached a climax in the abstract art of Kandinsky and Pollock, was coming to an end (and we have seen how Pollock's art directly informed Nuclear Art and Metzger's auto-destructive art). As Yves Klein put it, the atomic bomb offered the "ultimate abstraction imaginable." Now, rather than rejecting physical science in favor of inner experience, as Kandinsky had in 1913, artists as diverse (and extreme) as Klein, Piene, Tinguely, and Metzger all professed their strong desire to collaborate with scientists – notwithstanding the fact that their explosive propositions were essentially parodies or travesties of large-scale, government-sponsored science projects. These artists' influential projects and demonstrations were designed to command attention through destructive spectacle, dramatizing on a public rather than private scale the violent contradictions of a society for whom future progress would be shadowed forever by the means of its total undoing.

References

Alinovi, Francesca. 1983. "Spaziali e nucleari – L'informe abnorme." In *L'informale in Italia*, 35–39. Bologna: Galleria d'arte moderna.

Alloway, Lawrence. 1959. Introduction. In *Paintings from the Damiano Collection*. London: Institute of Contemporary Art. Unpaginated.

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

Announcement for *Premio Gianni*. 1952. Milan: Galleria d'Arte del Naviglio. Collection Fondazione Lucio Fontana, Milan. Unpaginated.

Arias, Bernardo, Horacio Cazenueve, Marcos Fridman, Pablo Arias, Rodolfo Burgos, Enrique Benito, César Bernal, Luis Coll, Alfredo Hansen and Jorge Rocamonte. 1946. *Manifiesto Blanco*. Buenos Aires. Unpaginated.

Bann, Stephen. 1970. *Experimental Painting: Construction, Abstraction, Destruction, Reduction*. New York: Universal Books.

Barilli, Renato. 1988. "Tachisme, informel, abstraction lyrique." In *Les Années 50*, 80–82. Paris: Centre Georges Pompidou, Musée national d'art moderne.

Beothy, E. 1951. "L'espace-temps." *Art d'aujourd'hui* 2(5) (April–May):10.

Boyer, Paul. 2001. "The United States, 1941–1963: A Historical Overview." In *Vital Forms: American Art and Design in the Atomic Age, 1940–1960*, edited by Brooke Kamin Rapaport and Kevin L. Stayton, 38–75. Brooklyn: Brooklyn Museum of Art; New York: Harry N. Abrams.

Byron, William R. 1962. "Wacky Artist of Destruction." *Saturday Evening Post* 235 (16) (April 21):78.

Cardazzo, Carlo. 1952. "Premessa." In *Premio Gianni*. Milan: Galleria d'Arte del Naviglio. Unpaginated.

Clark, T. J. 1999. "Pollock's Smallness." In *Jackson Pollock: New Approaches*, edited by Kirk Varnedoe and Pepe Karmel, 15–31. New York: Museum of Modern Art; Harry N. Abrams.

Corgnati, Maria. 1999. *Il Movimento Nucleare*. Volume 3 of *Arte a Milano 1946–1959*. Verona: Edizioni dell'Aurora.

[Crawford, Ralston.] 1946. "Bikini." *Fortune* 34 (6) (December):156–61.

Dali, Salvador. 1957. *Dali on Modern Art: The Cuckolds of Antiquated Modern Art*. Translated by Haakon M. Chevalier. New York: Dial Press.

Dali, Salvador. 1976. *The Unspeakable Confessions of Salvador Dali, as Told to André Parinaud*. Translated by Harold J. Salemson. New York: William Morrow.

Dali, Salvador. 1990. *Salvador Dali*. Edited by Pierre Théberge. Montreal: Montreal Museum of Fine Arts.

Dali, Salvador. 1998. *The Collected Writings of Salvador Dali*. Edited by Haim Finkelstein. Cambridge: Cambridge University Press.

Davis, Douglas. 1973. *Art and the Future: A History/Prophecy of the Collaboration between Science, Technology and Art*. New York: Prager.

Eco, Umberto and G. B. Zorzoli. 1963. *The Picture History of Inventions: From Plough to Polaris*. Translated by Anthony Lawrence. New York: Macmillan.

Einstein, Albert. 1931. *Cosmic Religion: with other Opinions and Aphorisms*. New York: Covici-Friede.

Frascina, Francis. 1993. "The Politics of Representation." Chapter 4 in *Modernism in Dispute: Art since the Forties*, by Paul Wood, Francis Frascina, Jonathan Harris, and Charles Harrison, 77–169. New Haven: Yale University Press; London: Open University.

Friebe, Wolfgang. 1985. *Buildings of the World Exhibitions*. Translated by Jenny Vowles and Paul Roper. Leipzig: Editions Leipzig.

Gamwell, Lynn. 2002. "The Atomic Sublime." In *Exploring the Invisible: Art, Science, and the Spiritual*, chap. 12, 259–280. Princeton, New Jersey: Princeton University Press.

Giani, Giampiero. 1957. *Spazialismo: origini e sviluppi di una tendenza artistica*, 2d ed. Milan: Conchiglia. Unpaginated.

Gillen, Eckhart. 1997. "Tabula Rasa: German Images before and after 1945." In *German Art from Beckmann to Richter: Images of a Divided Country*, edited by Eckhart Gillen, 16–22. Cologne: DuMont.

Greenberg, Clement. 1952. "Jackson Pollock's New Style." *Harper's Bazaar* 85 (2883) (February):174.

Guilbaut, Serge. 1983. *How New York Stole the Idea of Modern Art: Abstract Expressionism, Freedom, and the Cold War*. Translated by Arthur Goldhammer. Chicago: University of Chicago Press.

Hadler, Mona. 2001. "The Bomb in the Postwar Era: From the Sublime to Red Hot Candy." *Source: Notes in the History of Art* 21 (1) (Fall): 38–43.

Haskell, Barbara. 1986. *Ralston Crawford*. New York: Whitney Museum of American Art.

Henderson, Linda Dalrymple. 1998. *Duchamp in Context: Science and Technology in the* Large Glass *and Related Works*. Princeton, New Jersey: Princeton University Press.

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press

Hultén, K. G. Pontus. 1975. *Jean Tinguely: "Méta."* Translated by Mary Whittall. Boston: New York Graphic Society.
Kandinsky, Wassily. 1964. "Reminiscences (1913)." In *Modern Artists on Art: Ten Unabridged Essays*, edited by Robert Herbert, 19–44. Englewood Cliffs, New Jersey: Prentice-Hall.
Klein, Yves. 1973. "Ma position dans le combat entre la ligne et la couleur." 1958. In *Zero*, edited by Otto Piene and Heinz Mack, translated by Howard Beckman, 10–11. Cambridge: MIT Press.
Leja, Michael. 1993. *Reframing Abstract Expressionism: Subjectivity and Painting in the 1940s*. New Haven: Yale University Press.
McKay, Alwyn. 1984. *The Making of the Atomic Age*. Oxford: Oxford University Press.
Mellor, David. 1993. *The Sixties Art Scene in London*. London: Phaidon.
Metzger, Gustav. 1961. *Auto-Destructive Art*. Announcement for demonstration by G. Metzger, South Bank London, 3 July. London: St. Martins' Printers. Unpaginated.
Morris, Frances. 1993. Paris *Post War: Art and Existentialism*, 1945–55. London: Tate Gallery.
"Outside is Everything." 1952. *Time* 59 (21) (May 26):73.
Piene, Otto. 1973. "Paths of Paradise." 1961. In *Zero*, edited by Otto Piene and Heinz Mack, translated by Howard Beckman, 148–49. Cambridge: MIT Press.
Pollock, Jackson. 1999. *Jackson Pollock: Interviews, Articles, and Reviews*, edited by Pepe Karmel. New York: Museum of Modern Art; Harry N. Abrams.
Ponti, Gio. 1951. "La ceramica italiana." *Domus* 260 (July–August 1951):37–38.
Ponti, Lisa. 1949. "Primo graffito dell'età atomica." *Domus* 233 (February 1949):44.
Reinhardt, Ad. 1946. "How to Look at Three Current Shows." *PM* (15 December, magazine section):12.
Reinhardt, Ad. 1991. *Art -as-Art: The Selected Writings of Ad Reinhardt*, edited by Barbara Rose. Berkeley and Los Angeles: University of California Press.
Riley, Maude. 1943. "Fifty-Seventh Street in Review: Explosive First Show." *Art Digest* 18 (4) (15 November):18.
Sartre, Jean-Paul. 1965. "Fingers and Non-Fingers." In *Wols*, edited by Werner Haftmann, translated by Norbert Guterman, 30–41. New York: Abrams.
Sauvage, Tristan [Arturo Schwarz]. 1962. *Nuclear Art*. Translated by John A. Stevens. Paris: Editions Vilo.
Sega Serra Zanetti, Paola. 1994. *Arte astratta e informale in Italia, 1946–1963*. Bologna: Cooperativa Libreria Universitaria Editrice Bologna (CLUEB).
Segi, Shinichi. 1983. "Le réaliste de l'immatériel." In *Yves Klein*, 81–87. Paris: Centre Georges Pompidou, Musée national d'art moderne.
Stich, Sidra. 1994. *Yves Klein*. Stuttgart: Cantz.
Stiles, Kristine. 1987. "Synopsis of the Destruction in Art Symposium (DIAS) and Its Theoretical Significance." *The Act* 1 (Spring):22–31.
Stiles, Kristine. 1992. "Survival Ethos and Destruction Art." *Discourse: Journal for Theoretical Studies in Media and Culture* 14(2) (Spring):74–102.
Stiles, Kristine. 1996. "Art and Technology." Introduction to Chapter 5 in *Theories and Documents of Contemporary Art*, edited by Kristine Stiles and Peter Selz, 384–96, 903–5. Berkeley and Los Angeles: University of California Press.
Stiles, Kristine. 1998. "Uncorrupted Joy: International Art Actions." In *Out of Actions: Between Performance and the Object, 1949–1979*, edited by Paul Schimmel, 227–329. Los Angeles: Museum of Contemporary Art; New York: Thames and Hudson.
Taylor, Kendall. 1987. *Philip Evergood: Never Separate from the Heart*. Lewisburg, Pennsylvania: Bucknell University Press; London: Associated University Presses.
Viatte, Germaine and Henry-Clyde Cousseau. 1982. *Aftermath: France 1945–54: New Images of Man*. London: Barbican Center.
Waddington, C. H. 1970. *Behind Appearance: A Study of the Relations between Painting and the Natural Sciences in this Century*. Cambridge: MIT Press.
Weiss, Jeffrey. 1983. "Science and Primitivism: A Fearful Symmetry in the Early New York School." *Arts Magazine* 57 (7) (March):81–87.

https://doi.org/10.1017/S0269889704000274 Published online by Cambridge University Press