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Journal
Paroles gelées, 14(2)

ISSN
1094-7264

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Publication Date
1996

DOI
10.5070/PG7142003050

Peer reviewed

Jamming the Machine: Yves Klein's *Blue Monochrome* and the End of the Avant-Garde

J. Stephen Murphy

In the past few years, we have seen the emergence of a new dialogue between what C.P. Snow referred to as the two cultures, i.e. the humanities and the sciences. The growing importance of information technology in the academy coupled with the boom of interest in chaos theory has created a climate in which many critics in the humanities have turned to science as a new resource for their work. This essay will attempt to further encourage this conversation between the cultures by turning to the ideas of Ilya Prigogine, a Belgian scientist who won the Nobel Prize for chemistry in 1977, in the hope that they can not only shed light on a theory of art, but in turn, that art can shed light on scientific theory. My work entails an introduction to Prigogine's work on entropy, evolution, dissipative structures and complex machines. Prigogine and I share a common interest in newness, he in new structures, I in new artworks. Taking Yves Klein's blue monochrome paintings as exemplars of the new and thinking of the artwork in terms I will later define as machinic, it is my aim to account for artistic evolution in the same way that Prigogine accounts for biological evolution.

Ilya Prigogine has commented on the coincident development in the middle of the nineteenth century of two conflicting theories of evolution. From life sciences came an evolutionary model that describes life beginning in some chaotic pool of proteins that joined together to form a basic organism. From that most basic life form evolved an incredible variety of highly complex, amazingly diverse life forms. Physics, on the other hand, as described by the Second Law of Thermodynamics, speaks of a universe in which entropy is constantly increasing, a universe continuously moving towards greater disorder, moving, that is, towards equilibrium.

It may seem odd to understand disorder as equilibrium, but a quick illustration should clearify that notion. An ice cube is an organized state of water. It will slowly melt into a puddle of room temperature. It will stay in this state of equilibrium unless some-

thing works on the ice cube from the outside; it will not spontaneously turn back into an ice cube. We can think of entropic equilibrium as the end of becoming. The ice cube will undergo many changes as it melts, but it will eventually end up in a state where it will no longer change; the room temperature puddle is the end of possibilities. The French philosopher Michel Serres argues that the Second Law of Thermodynamics scientifically proves what we intuitively know: time moves in only one direction. Time moves irreversibly towards greater entropy (Serres 71).

As narratives of the universe, evolution puts order at the end of its story while entropy places it at the beginning. Clearly, there is a contradiction in these statments. How can the universe be moving toward chaos as it grows more organized? How can we explain the great amount of structure and organization we encounter in the world without denying the fact of entropy?

Work allows for the existence of highly organized structures. The ice cube stays frozen through the work of a freezer; the human body keeps itself alive through the work of its organs and systems. This ability to maintain its own integrity and the ability to grow and reproduce are the largest differences between the organic and the inorganic structure.

The organic structure does not, however, escape or defeat entropy. The genius of Prigogine lies in his refutation of this hypothesis; he argues that it is in fact entropy that makes evolution possible. Before we see how this is so, we must consider the phenomenon of self-organization, a key concept in Prigogine's work. In order to retain its integrity against entropy, an organism must be organized and stay organized. The biological structure organizes itself through a "continual expenditure or dissipation of energy that keeps it away from . . . equilibrium" (Paulson 105). Absolute entropy can be understood as the end of movement; the organic or dissipative structure avoids entropy by keeping itself moving. It does so through a continuous exchange of energy with its environment and between its internal systems. We are confronted again with a strange contradiction. The dissipative structure avoids entropy by expending energy.

We would think that the dissipation of energy would increase the entropy in the structure, and it does, but only to be recovered again as higher organization. The dissipative structure can make this recovery because it is complex. William Paulson defines a

complex structure as an organization of many parts and systems, all existing at different levels in different relations to each other. Unlike a car, also made up of many interacting parts, the body, an exemplary complex structure, cannot be understood through an understanding of its parts. Complexity is more than the sum of its parts (Paulson 107-108).

The dissipative structure can remain far from equilibrium because complexity allows for the existence of different levels of entropy within the different parts of the structure. This difference in energy levels creates a flow within the structure, a movement of energy from levels of lower entropy to levels of higher entropy. Within the body, energy flows from organ to organ, from the outside world to the inner world, from system to system; it is through this flow, the continuous change and exchange occurring at the micro-level, that a constant state far from equilibrium is maintained at the macro-level of the body. The observation of this microstructural flow within macrostructural stability led Michel Serres to describe the dissipative structure as homeorrhetic (*homos* meaning the same, and *rhessis*, flow). Serres coined this neologism to emphasize the dynamism of the dissipative structure against the stability emphasized in the word homeostasis. Stability is maintained only through movement, or as Serres vividly describes it, "[The] river flows and yet remains stable in the continual collapse of its banks" (74).

Homeorrhesis keeps the structure away from equilibrium. We can explain the persistence of a highly organized structure as maintenance of order in the face of entropy, but how are we to explain evolution, the creation of structure? We must look again to homeorrhesis and complexity for an answer. At the microstructural level, we can observe "short-scale randomness, providing the innovative element necessary to explore the state space" and at the macrostructural level "long-range order, enabling the system to sustain a collective regime encompassing macroscopic spatial regions and macroscopic time intervals" (Prigogine, *Exploring Complexity* 218). This short-scale randomness is of vital importance in evolution. The dynamic micro-level experiences certain breaks or bifurcations, as Prigogine calls them, in its flow (*Exploring Complexity* 71-75). In evolutionary terms, the bifurcation is more commonly known as a mutation. It is the bifurcation that leads to evolution because it threatens the stability of this steady state; the

bifurcation creates an increase in entropy in the structure. This entropy gives way to further fluctuations within the system that threaten to carry it "to one of the possible, new branches of solution" ("The Challenge of Complexity" 9). This threat to order must be organized; the macrostructure is transformed as it reorganizes itself against increasing entropy. The mutation, an extra chromosome for example, must either be put to use in furthering the species with an extra chromosome, or the species might be destroyed. It is the bifurcation, then, that provides the innovative element. Prigogine tells us, "the possibility of a dissipative structure depends on boundary conditions, but they themselves are modified by the occurrence of dissipative structures" ("Unity of Physical Laws" 12). The boundary of the homeorrhetic structure is the place of bifurcations, where entropy is introduced and then reorganized into a new structure, a structure now containing disorder as its order.

Michel Serres believes that evolution should be understood as negentropy, that is, as a process of organization into greater order (Serres 73). If we can understand entropy as the irreversibility of time, then evolution is, as Michel Serres points out, a reversing of time (Serres 82). Evolution is a way of avoiding the end because it ensures always more possibilities, more combinations, more structures left to be created against the limit of possibility embodied in the notion of entropy.

Art is frequently thought of in evolutionary terms. Art grows more complex, more structured as time passes; each artist learns from his predecessors, takes up their challenges and creates new works out of the tradition, thereby transforming the tradition. As it happens in the natural world, the art world operates in order to avoid its end, to avoid the end. Much as life forms must continually expend energy to preserve their structures and must reproduce themselves, so too must the community of artists, patrons, critics and the audience create new artworks in order to maintain its integrity.

Art is not, of course, a living organism, yet it exhibits many of the characteristics peculiar to organic structures. The artwork is a machine, a complex homeorrhetic machine itself a part of the larger art machine. Why talk about a painting as a machine? First, to emphasize that it is inanimate and yet dynamic. A machine is not a living thing, yet we think of machines in a qualitatively

different way than we think of inanimate objects such as tables or rocks. It is an almost-living thing. My second reason for describing art as machinic is based on the model given us by cybernetics. Cybernetics studies machine systems, especially those in which human beings interact with machines, forming a kind of organic-machinic circuit. One might think of the World Wide Web in these terms. Art exists in the interaction between people, between people and objects, between objects. It cannot be located in any one site, but only in the totality of the flowing circuit. The final reason I refer to the artwork as machinic is to draw attention to the intimate connection between the artwork of our century and machines. On a strictly pragmatic level, new art forms have largely risen out of new technologies. Avant-gardism and technologism, in their demand for the ever-new, have served as our century's guiding motivations for production. A study of Yves Klein will afford a better understanding of the machinic nature of the avant-garde.

Yves Klein (1928-1962) was a French painter who is regarded as one of the most important artists of the post-War era, a precursor to minimalism, Pop, and conceptualism. Klein's most famous paintings, his blue monochromes, were exhibited in the mid-fifties It was an exhibit of eleven identical paintings, all of them the same size, all of them the same smooth-surfaced, solid, uniform blue cotton canvases. They look as if they are mass-produced. The initial reaction to Klein's exhibition of blue monochromes was highly antagonistic. He was accused of being a charlatan playing a depraved joke on the art world. Today he is considered one of the great artists of our century.

Like all cutting-edge artists, Klein was interested in beginnings and endings. The new artwork is both an endpoint, a forestalling of the end, and a beginning. It is an end in its position at the culmination of a tradition. It is a forestalling of the end, a negentropic force as is evolution, because the continued production of new order resists the increasing disorder of the universe. It is a beginning because the new work gives rise itself to new art forms.

Klein saw his blue monochromes as endworks, the "final link" in a tradition of avant-gardism started by the Impressionists (Stich 84). Writing about these paintings in his book, "*mon livre*," Klein recounts an old Persian tale about a flute player who one day began to play a single, continuous note on his flute. This went on

for twenty years. Finally, the man's wife, a little bored by then, said to her husband, "Listen to all the other flute players. Hear all the wonderful, varied and interesting sounds they make." The man responded to his wife that it was not his fault that he had found the note all the others were still hunting for (Klein qtd. in Stich 81). In his blue monochromes, Klein felt that he had found the color, had created the painting all other artists were looking for. Klein saw his blue monochromes as the end of the new, the achievement of total entropy, a state of perfect equilibrium from which no new art forms could come.

Or so Klein would have us think. The fact is that new art forms have continued to appear; Klein himself went on to create a lot more work. Newness has not ended. It is hard to imagine it ending anytime soon because in a homeorrhetic machine the end is always programmed into the machine; it is part of the machine. The possibility of the end keeps the machine running.

I am being rather abstruse. To get a more concrete idea of what I am talking about let us return to Prigogine's model. Production, Prigogine shows us, takes place only in far-from-equilibrium conditions. In the living organism, disequilibrium is produced through a fluctuation between the micro-levels of the body's organs and systems and the macro-level of the body or the micro-level of the organism and the macro-level of the species. In terms of the artwork, we see a similar fluctuation between the micro-level of the artwork and the macro-level of art, the tradition, the canon and its accepted conventions. This fluctuation between part and whole, new and old keeps the entire machine in a state of disequilibrium. The new work can be understood as the micro-structural appearance of "short-scale randomness" while the tradition is the macrostructural level of long-range order, enabling the system to sustain a collective regime encompassing macroscopic spatial regions and time intervals. New artworks are coming into the world everyday; we are always encountering works for the first time, but despite their novelty or difference from every other artwork we have seen, we still recognize them as art; we place them within the body of art, if not within a particular school and period in the history of art. We witness a continuous flow on the micro-level and a continual stability on the macro-level: the flowing of the new, the sameness of the tradition—this is why we call art a homeorrhetic machine.

We have seen how the art machine maintains its integrity through this fluctuation between the microstructural level of the individual work or works and the macrostructure of the canon, through the active location of the individual work within the body of art, giving order both to the part and the whole. But how do we explain the creation of new artworks? It is at the micro-level, at the boundary of the avant-garde machine that we shall find an answer. If the canon is maintained through a continual identification of itself, by organizing individual works as artworks, what happens when the machine encounters works that resist identification and organization? Do some works break the flow, jam the *rhessis*? Prigogine describes these breaks as bifurcations. These bifurcations lead to evolution because they threaten the stability of the state; the bifurcation creates an increase in the structure's entropy level.

Because they did not conform to accepted definitions and conventions of art, Klein's blue monochromes were bifurcations in the machine's structure. They broke all the rules by which art organizes itself. They are non-representational. They lack a subject matter or title to guide us in any way. They bear no mark of human creation or authorship nor any kind of signature in style. They are not even unique. How can these paintings be considered art? They were not by many of those who first saw them. Klein was delighted by "the real depth of the bewilderment that [they] brought about in men of good will who are so very little concerned about passively submitting to the sclerosis of known concepts and established rules" (Stich 81). The blue monochromes jammed the machine. They blocked the proper operation of the art machine. If the machine operates as I have described it through the identification of new artworks and organization of the work into the machine, making its structure larger and larger, then what the blue monochromes do is resist being identified and organized as art.

The appearance of the bifurcation in the machine challenges the machine to either organize this disturbance or succumb to eventual disorder. The jam can only be fixed if the structure reorganizes itself. The definition of art, the limits of what art is, must be expanded so that the blue monochromes can be organized within the structure. Only after this reorganization of the machine and of the bifurcation can the work be understood as new. The artwork only becomes new in retrospect, upon its acceptance into

the tradition. The art of the new is thus a relic of the past. Once we recognize it *as* new, we can only say it *was* new. In this sense, we can say that newness does indeed end. The new is an ending.

It is also a forestalling of the end. The blue monochrome paintings, precisely because they do jam the machine, allow the machine to keep on running, to keep evolving. Entropy makes evolution possible. If the canon simply kept accruing new artworks to itself that perfectly fit within the limits of its structure, the machine would eventually reach a point of homogeneity, that is, the point of maximum entropy, death, the end. Variation and transformation must occur if the machine is to avoid equilibrium; this variation occurs at the bifurcation point. The machine must be jammed. This is what was meant earlier by the idea that the end is programmed into the machine. In organizing the blue monochromes within the structure of the machine, in transforming them into part of the tradition, the machine introduces the variation into itself. This higher organization is necessary to keep itself running.

Finally, the new artwork is a beginning. The machine recovers disturbances, absorbs any jam and puts it to work in the service of the machine, but in doing so, the machine is transformed. So, while we might see subversive artwork like the blue monochrome as ultimately failing in its ability to resist absorption within the machine's power, it is important to recognize that the machine only does so at a cost to itself. It opens up its boundaries, shifts them, and reveals those boundaries as contestable. So, while we can understand these paintings as an ending, the culmination of a historical tradition, Yves Klein's blue monochromes are not the end of newness. The *homos* of the machine, the sameness of tradition, is changed into a different sameness, a new sameness that will give rise to ever-new artworks.

Notes

[1] Snow, C. P. *The Two Cultures*. 1959. Intro. Stefan Collini. Cambridge: Cambridge UP, 1993.

[1] Prigogine, Ilya. "Unity of Physical Laws and Levels of Description." pp. 1-2.

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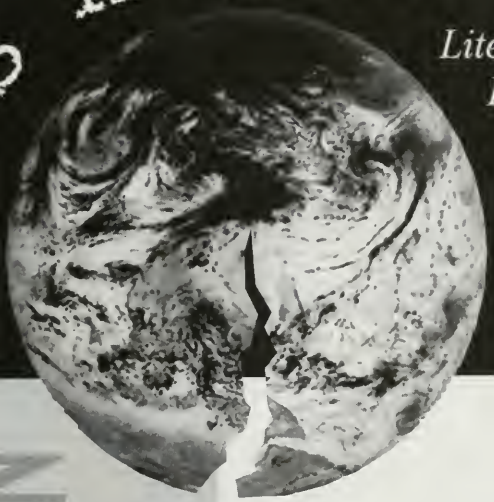

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Volume 14.2 ❧ 1996

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Design and Layout: Joyce Ouchida

Paroles Gelées was established in 1983 by its founding editor, Kathryn Bailey. The journal is managed and edited by the French Graduate Students' Association and published annually under the auspices of the Department of French at UCLA. Information regarding the submission of articles and subscriptions is available from the journal office:

Paroles Gelées
UCLA Department of French
2326 Murphy Hall
Box 951550
Los Angeles, California 90095-1550
(310) 825-1145
gelees@humnet.ucla.edu

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