

## The Idea of Time, Motion and Dynamism in Art

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### Abstract

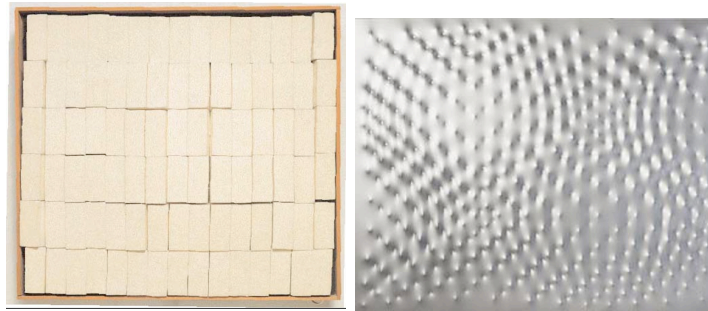
Visual Arts have started from Antiquity to confront themselves with ideas of Science. We are interested here with the “Science of Vision”, that creates those tools which make us able to represent (even if partially) the “reality” in which we live. In XX Century, Photography, Cinema and Digital Art have opened completely new possibilities of interaction. The aim of this paper is to discuss shortly this issue and present the artwork “Geometric man”.

### 1 Introduction

It was in the late nineteenth century that artists such as E.J. Marey and E. Muybridge began to experiment theories about the *dynamics of movement*, followed subsequently by Degas and Rodin, even if just “illusively” in some of their sculptures. In 1910 the topic was re-taken and discussed by Italian Futurists. The modern representation of “scientific knowledge” in artworks, together with the application of “industrial technology” into Art, can be attributed to the great history of so-called “Abstract Art”, based on the various possibilities of using a geometric grid, or also a free organization of syntactic elements, creating composition that tell us about creative experiences amenable to be recollected under a “rational design matrix”. The beginning of XX century saw also the birth of new discussions about the foundations of Artworks as “aesthetic objects”, with a new view in favor of the production of art objects that have eventually and largely expanded the horizon of formal “Visual Arts”: this was in fact the birth of a whole artistic program on Vision, Motion and Dynamism, in which *objects speak of movement and are in movement*. In contrast to the so-called “Informal Art”, in which the creative act is spontaneous and impulsive, there was the idea of a new form of Art that overcomes the gap between “traditional Art” and “scientific thought”, beyond the accuracy of the “harmonic rule”. Schoffer was among the protagonists of “Kinetic and Programmed art”. He stated once: “... it is unacceptable in the twentieth century to still use the techniques of the XIV and XV centuries to create works of Art [...] The Arts must use the same means of Science and Technology, namely the contemporary mean”. There is here hidden also the “idea of abstraction”, which directly ensues from the specific context; the idea is transferred directly to artworks: objects, mechanisms, with applications in Industrial Design and Architecture, in a perfect tuning with the “era of mechanization” (as anticipated by Futurism). A references to the fundamental part of this international experience of the group was the “*Cercle et Carré*”, founded in Paris in 1929 (Torres Garcia, Mondrian, Arp, Léger, Le Corbusier, Gropius) followed by the movement called “*Abstraction-Creation*” (Gabo, Kandinsky, van Doesburg, A.H.G. Vantongerloo, Fontana, Gleizes, Nicholson, Robert and Sonia Delaunay). We cannot forget to recall Max Bill, the mediator between the Bauhaus pre-war tradition (as recalled in [1]) and the subsequent developments of the “Project Culture” of Europe. In 1944 Max Bill was indeed the organizer of a major exhibition of “Concrete Art”. We finally recall that thanks to the related idea of “informal existentialism”, experimental trials and all trends operating “in the name of theories” or “arguments” were overall related with the aim of creating “open works”, able to “actively integrate the viewer”. We recall in this respect what Umberto Eco said in 1962: “*The avant-garde art is the only one to maintain a relationship of meaning with the world in which live*” (see [2]).

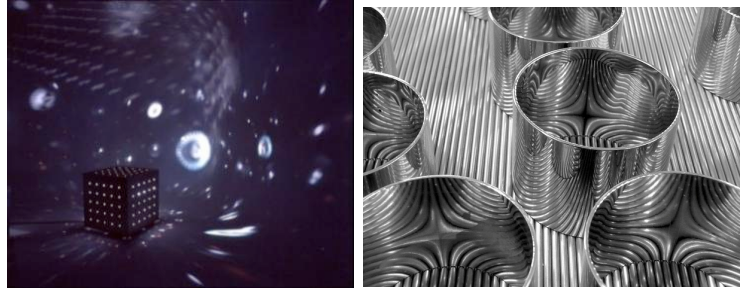
## 2 Kinetism as an “Idea” before Being Transformed into a Mechanical Object of Art

The Italian artist Bruno Munari organized in 1962, in Milano, an exhibition whose title “Programmed Art” was in fact coined by Eco. The artistic project of this movement, also known as “Kinetic Art” [1] takes into account the scientific nature of “creative increasing”, as the basic element that will eventually lead to the definition of “the idea of movement”; either as a real movement, produced by internal mechanisms of the artwork or caused by an act of the viewer (e.g, by pushing the artwork); or as an “illusory movement”, resulting from shocks, such as abstract visual effects, hidden in graphic structures and reliefs, or provoked by the viewer by changing its position with respect to the artwork (“Optical Art”). This “kinetics”, far from becoming “mechanization”, is primarily an “essence” (a category of thought) which can be translated into a mechanism, or another object able to stimulate the idea of motion in artworks. Artists of previous times had occasionally used “kinetic art instruments” in a conscious way, deemed to be neutral: specific and effective examples can be found in the paintings of Fernand Léger, as well as in Impressionists, Cubists and Futurists ([1]). Around 1960 artistic circles in Italy began to define the circumstances that eventually led to the establishment of new lines of artistic research.



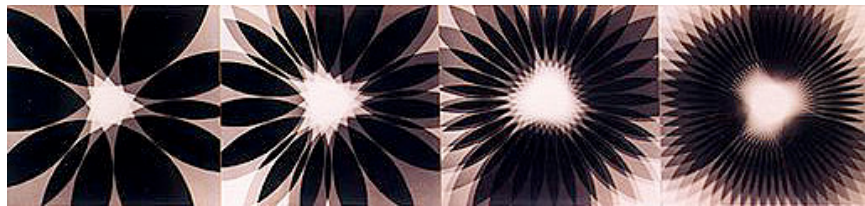
**Figure 1:** Gianni Colombo, *Strutturazione Pulsante*, 1959; **Figure 2:** Enrico Castellani, *Superficie Argento*, 2008

According to these lines, one can reject the free gesture and the “lumping” proper of “informal paintings”, rather adopting a strict sort of a rigorous “Calvinist return to order”: in a rejection of the color, works become genuine “chromophobias”, only partly related to certain paradigms of purism in Painting and Architecture of the twenties (about which we just mention Theo van Doesburg). Almost simultaneously, in Paris, Milano and Padova, the main groups that animated the scene of “Kinetic Art” were formed in those years. In 1959 the “Group T” was founded in Milano. This included Gabriele de Vecchi, Giovanni Anselmi, Gianni Colombo, Davide Boriani and Grazia Varisco after 1960. They put in place “*the transmission of an idea and also of an artisanal method of form and making and form*”. We mention in particular Gianni Colombo, who was able to build, with his insights, spatial “para-architectural” situations destabilized and destabilizing. He used electronic means with awareness; the results were always different, but always directed to the manipulation and alteration of the quiet states of the form, either a real or a virtual one. Out the data of their “geometry” he was able to construct phenomenologies of “change”, “pulsation” and “instability” (see Fig. 1). In the same year the first issue of “Azimuth” was published in Milano, directed by the artists Enrico Castellani and Piero Manzoni (see Fig. 2). Although short-lived, this was a clear testimony of the need to produce artworks going well beyond classical paintings. In a more modern opinion, “published” artworks are, in fact, the result of a “reduction to the essence” of those elements that constitute the language of Art and artworks. With the use of monochrome canvases, often completely white and extruded, they used just light to create visual effects and shadows. It was no longer the color to paint an image, but it was directly **the movement of light to make color** and to create real (or virtual) images. Since 1957, in Dusseldorf was born the “Group Zero”. This included the German artists Heinz Mack, Otto Piene and Gunther Uecker (see Fig. 3).



**Figure 3:** Otto Piene, *Lichtraum (Light Spaces)*, 1962; **Figure 4:** Manfredo Massironi, *Riflessi*

In 1959 the “Group N” was founded in Padova (Alberto Biasi, Ennio Chiggio, Toni Costa, Gabriele Landi and Manfredo Massironi; see Fig. 4). In 1964 another group, called the “(Milanese) MID Group”, was formed (including Antonio Bari, Alfonso Grassi, Gianfranco Laminarca and Alberto Marangoni; Fig. 5). Compared to “Group N” and “Group T”, the “MID Group” worked on the subject of “applied visual communication”, taking also care of Industrial Design. Many artists devoted themselves primarily to the “project culture” that was proper of Architecture and Design, aiming at embedding it into “Programmed Art”. It could be now said that “Programmed Art” was turned in a sort of “planned international style”, that flourished in non-causal historical circumstances. It was a sort of study about the physical “sciences of motion”, but also of the “Science of Perception”; or, better, dipping into Husserl's phenomenology. Gestalt was in fact at the basis of these investigations ([1] and ref.s therein).



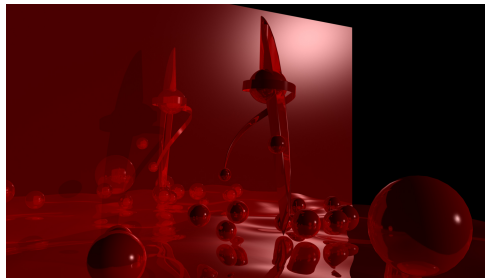
**Figure 5:** Gianfranco Laminarca, *Sequenza di Immagini Stroboscopiche*, 1965/66

We can also cite the Philips Pavilion, designed by Le Corbusier at the Expo in Brussels in 1959; it was an astonishing “multimedia architecture”, stimulated by the “growing season” of Electronics, that generated a whole stream of new ideas in Architecture. It was conceived and designed with the aid of the Greek engineer and composer Iannis Xenakis, who for the occasion had created a real show of sound and moving lights. It should be also said that the phenomena of “Kinetic Art” and “Programmed Art” are not to be seen in a univocal way, since this would be methodologically wrong. One should instead find some points of contact between the unique architectural-sound-multimedia performance of Le Corbusier and Xenakis with those “lumokinetic” performances due to the artists of the Zero Group, more “anarchically organized” in urban spaces. In 1960 yet another group formed in Paris; it was the “Groupe de Recherche d'Art Visuel”, better known as GRAV. It was founded by Francois Morellet, Joel Stein, Jean Pierre Yvaral, Julio Le Parc, Horacio Garcia Rossi and Francisco Sobrino. These artists concentrated their artistic research efforts on the analysis of image, movement and Time. The GRAV challenge means exactly the following: *“The elaboration pour l'élite, la production d'oeuvres unique, the annexe au marché de l'art”*. The intention was, in a sense, to create replicable artworks by trying to search or create other types of representation beyond the classical ones, i.e. the sculpture and painting (see [3]). And in the stream of the climate created by the spreading interest for the programming (and programmed) languages, as well as for Art inspired by optical-kinetic ideas, one must include also the birth of the magazine “Bit”, a significant vehicle of debate on the “applications of Informatics to Aesthetics” and, therefore, also on

the concept of “Computer Art” as a whole. Sponsored by the Contemporary Art Gallery in Zagreb, the magazine was published only from 1969 to 1972, but it left a perpetual message....

### 3 The ”Geometric Man”

The aim of this paper was to further enhance the understanding of the interaction existing between Art and Technology, and Mathematics in particular. We wanted in particular to stress once more that the use that can be made of new Technologies and new mathematical ideas can show and prove complex and fascinating ideas and paradigms, e.g. those linked to both the adventure of “visual perception” and also to its expression when it succeeds in “*overwhelming that space that belongs to Life*”. Thanks to courses and historical recourses, to past and present original ideas, all of them united by the same desire to experiment, to represent, to exist, to live in a “continuous time” communicating “on the move”, here we like to conclude with an explicit reference to the artistic work of one of us (DR), the installation “Geometric Man” (see Fig. 6).



**Figure 6:** Daniela Rinaudo, *Geometric Man*, 2010 - Video. Animation: Giuseppe Laria; Music: Costantino Rizzuti

*Geometric Man* [4] is a virtual journey into the “imaginary Time”, in search of another dimension into Space. His movement represents a conceptual abstraction of “real Time”. Time loses here linearity, gaining cyclicity: it becomes a spiral. “*Geometric Man*” is meant to be a “*shade*”, i.e an *abstraction*. Denatured from his anthropomorphic forms it becomes “*Compass*” and writes a story in the “actual Time” which, in turn, leads to another story in “imaginary Time” and vice versa, although the two stories can be very different. By manipulating visual properties like reflections and refractions we show how it is possible to create a fourth spatial dimension. The work, that was first presented at MOCA London by the courtesy of Michael Petry, in November 2010, is also visible in stereoscopy, with the intention of involving the viewer in this journey in search of the fourth dimension of Space .... and even more. As we said in the Introduction XX Century technologies - Photography, Cinema and Digital Art - have opened new paths for Art revealing completely new possibilities of interaction between Art & Science; our artistic world is therefore running on the forefront of a new age, with its foremost ambitions ([5],[6]).

### References

- [1] M.G. Lorenzi & M. Francaviglia, *The Role of Mathematics in Contemporary Art at the Turn of the Millennium*, APLIMAT - Journal of Applied Mathematics, **4** (2011); M.G. Lorenzi & M. Francaviglia, *Geometry as a Source of Inspiration in XX Century and Contemporary Art*, in these Proceedings.
- [2] U. Eco, *Opera Aperta*, Bompiani (Milano, 1993), p. 264
- [3] L. Caramel, *GRAV, Groupe de Recherche d’Art Visuel 1960-1968*, Electa (Milano, 1975)
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- [5] B. Riemschneider & U. Grosenick, *Art at the Turn of the Millennium*, Taschen (Köln, 1999)
- [6] L. Shlain, *Art & Physics*, Harper Perennial (New York, USA, 1991)