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### **PROGRAMMED ART di Bruno Munari**

The artist's job is to help his fellow men develop their understanding of the world we live in. In all the art of the past we saw a rich variety of static forms springing from the expression of nature in two or three-dimensional images. Today, however, we know that this expression of nature is not a natural convention; we realize that the world is continually being transformed by kinetic energy, that there is a structural arrangement of things that is continually modified by changes in the environment.

It is these messages, I believe, that today's artists ought to be passing on so as to increase our knowledge of the world, and make us understand certain facts which traditional artistic techniques were in no position to show us. But many avant-garde artists cling romantically to the technical preconceptions of static art, and still concern themselves with making personal demonstrations, with polemics between painting and anti-painting, or about sculpture in motion or sculpture made of found objects. They care about the uniqueness of the work of art and its corresponding value, about personal style as commercial investment, about gestures, chance discoveries and artistic scandals.

All this is on the way out; it belongs to a vanished world and no longer has any prospect of establishing genuine communication with the public. In my view we now need to conduct researches with a view to re-founding a true, objective visual language, free from any personal element and aesthetic prejudice, a visual language which can naturally and intuitively communicate the dynamic factors determining our new knowledge of the world. A true visual language, that is, comparable with that which characterized old-fashioned static art in the days when it was thought of as a craft.

My own researches lie in the direction of experiment and the mastering of these new dynamic, multi-dimensional visual means of expression. Conducted as objectively as possible, they set out from scientifically established facts and from technical and psychological data concerning creation and perception.

One such line of research which I began in 1954 deals with the possibility of visual communication and expression by means of polarized light, with a view to securing images whose colour transformation are according to nature and not according to somebody's personal tastes.

The technical answer is to use polarizing filters, introducing colourless materials of varying stratifications between the two filters. These stratifications and thicknesses determine and define the areas of colour, while the rotation of one of the filters allows the colours themselves to be varied over the full range. Such experiments have been demonstrated in several cities, most recently in Tokyo, where they were shown at the Museum of Modern art in 1960 to the accompaniment of specially prepared electronic music by Toru Takemitsu (the electronic sound corresponded to the colour derived from the light). A film about this experiment was made a short time ago in the Monte Olimpino studio in Milan.

Another piece of research, begun in 1959, deals with «continuous structures»: objects made up of an undefined number of modular elements set in a common framework and able to fit together. The form of these objects has some affinities with concrete sculpture, but they remain fragments of an infinitely extendable scale; they can be taken to pieces, recomposed and changed, subject each time to modification by the conditions of the environment.

More complex researches began in 1945 with the creation of kinetic objects whose make-up could be varied, driven by small clockwork motors. This led to the study of artistic programming, from which the current examples of programmed art result. Such objects have no connection with other forms of kinetic art that still make use of surrealist or neo-dada effects; they are rather the result of rigorous programming, which defines their materials, form and mathematical kinetic combinations. Generally they take the shape of small viewing screens, where formal and chromatic changes can be

seen as unstable images against a neutral field, or one subject to quantitative, but not formally specified, limitations.

A work of static art calls first for a scheme, a design, a technical preparation which may be either conventional or unconventional. A work of programmed art demands an actual programme of its own, consisting first of all in the exact establishment of the message to be communicated and in the choice of means of expression, uninfluenced by aesthetic, anti-aesthetic or stylistic preconceptions (thus use is often made of technical, scientific, physical or optical principles such as magnetic fields, optical effects, the limits of perception, colour change by addition or subtraction, virtual volumes and so on). The motive forces – mechanical, electrical, electronic, &c. – are taken into account, and the cyclical or infinite kinetic combinations. This is where computers can be of use to predict or establish possibilities. Computers have been used in the arts in Italy by Nanni Balestrini to compose the poem entitled «Tape Mark I» which was published (with technical explanations) in the *Almanacco Bompiani* for 1962; by Pietro Grossi in Florence to compose algorithmic music. Such music was used for the film *Moire* which Piccardo and I made at the Monte olimpino studio this year.

Finally comes what we may call «good design», i.e., the projection of the object, the apparatus itself or its container. The aim here is to construct an object capable of communicating visually the intuitively-perceived kinetic message. Often the object is a natural incorporation of the same idea (as good design demands); at other and times it is a neutral container. The forms, colours and transformations will vary according to the selection and programming of means and materials. Thus it is not just a form or a «composition» undergoing changes (as with Calder, Tinguely and co.) but a continual series of formal transformations. Imagine an iron sculpture being destroyed, then reduced to dust and sprinkled evenly over an aluminium surface under which magnets are agitated...

Enzo Mari and I belong to no group. Group T in Milan directs its researches to constructing objects which give the spectator visual information about the continual development of forms, as seen through their transformation. Those of Group N in Padua are concerned more with objects that produce variable optical effects according to where the spectator stands. Group N goes in for collective work, and all its objects are signed collectively with the «Group N» stamp. The «Nouvelles Tendances» movement is a mixture of more or less neo-Dada or Surrealist kinetic art (moving objects made from found elements; mechanical and casual movements) and the researches of the Paris Groupe de Recherche d'Art Visuel.

Works of programmed art have nothing in common with other forms kinetic art where a given composition, whether strictly geometrical or strictly casual and made up from found objects, moves through space changing position but remaining a composition none the less. Programmed art of more or less purity (purity being distinguished by the absence of stylistic preconceptions, as in good design) is now being created in several parts of the world.