

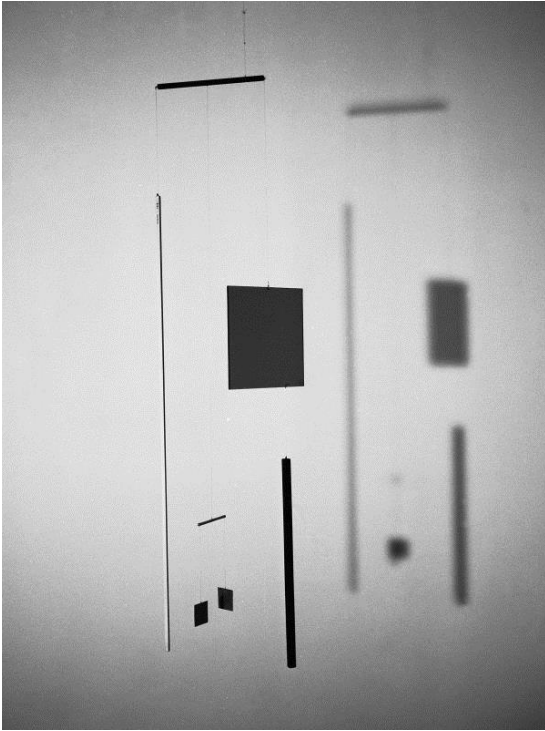
Bruno Munari. Creator of Forms.

Munari is an artist whose work does not adapt to the normal practices of simplification by categories referred to the various artistic disciplines, and even less can be traced back to a classification by currents, movements or groups. To force it into the panorama of Kinetic Art would be limiting, even though with his airborne works he was one of its pioneers. And to call him a designer rather than an artist would also be limiting. It does, instead, make sense to evaluate him over his long career in experimental art, and to observe that among his many transversal interests there can be seen a constant inquiry into how one form can be transformed into another. Such an attentive critic as Guido Ballo¹ observed that the basic characteristic of all Munari's work is to be looked for in the fact that nothing ever stands still; everything moves with the aim of creating images that are formed and dismantled, just as happens, at times extremely slowly, in nature². This specific idea is in perfect harmony with the evolution of science in the 20th century which shows us that the best grammar for reading the things of the world is that of change, of "coming about". As summed up by the physicist Carlo Rovelli, the world is not a set of things but a group of events and processes of something that comes about, that does not last, and that is in continuous transformation³. The critic Carlo Ludovico Ragghianti too underlined Munari's ability to create "*mobile and transcurrent forms that are transformable and fertile with expected accidents and eventualities, and that immerse the viewers in a fantastic world and in a life of surprising innovations of feelings and sensibilities*"⁴.

His youthful enthusiastic adhesion to the Italian Futurist movement projected Munari into the great linguistic revolution that exploded in Europe as a result of the tireless promotional activity of Filippo Tommaso Marinetti. The "Marinettian" revolution aimed at dislodging in Italy and Europe the burden of the past, and at renewing language by aligning it with the industrial and social transformations of modernity. All the twentieth century avant-gardes owe a great cultural debt to Futurism ("*a very potent, free and disinterested distributor of ideas*"⁵). Futurism allowed the formation of a prolific art scene, one in which a young artist could develop fast in close contact with all the European avant-gardes. And yet the young Munari's participation – even though supported by Marinetti who considered him the most promising of the artists working in Milan at the end of the 1920s⁶ – was from the very beginning critical from a theoretical view point.

Munari did not celebrate the beauty of machines for their strength, speed or power, but utilised them as a delicate, essential, diverting, and ironical device. His *Macchine Inutili* (*Useless Machines*) were the concretisation of the theoretical wish to give a fluid and evanescent form to images in movement, that dynamic movement so highly praised by Boccioni and then by Balla and Depero in the famous manifesto *Ricostruzione Futurista dell'Universo*, but in the end it was fixed in static forms, both in drawing and in sculpture. Perhaps the *Macchine Inutili* were closer than we think to the experiments with light undertaken by Moholy-Nagy, Hirschfeld-Mach, and Schwerdtfeger at the Bauhaus, where rotating machines and cardboard forms acted as modulators of light, with the aim of producing abstract films. So the idea that most characterised Munari when he made his debut in Milan in 1930 had deep roots both in the theoretical and philosophical formulations of Futurism, and in the experimentation of exponents of the Bauhaus.

The *Macchine Inutili* consist of aerial forms in cardboard, wood, aluminium, plastic or other humble and very light materials, tied together by invisible threads and balanced in space. The resulting composition can be interpreted as abstract painting, floating in space itself, and that changes according to time. In installations of these works it is, however, necessary to introduce one or more sources of light directed at the machine, so that the shadow, the most evanescent image produced by the movement of each individual element, can guide the viewer towards a poetic world of "reverberated" abstract images [fig. 1].



[Fig. 1]: *Macchina Inutile* [Useless Machine] 1947, Centre Pompidou Collection, Photo by Ada Ardessi, courtesy ISISUF Istituto Internazionale di Studi sul Futurismo, Milano

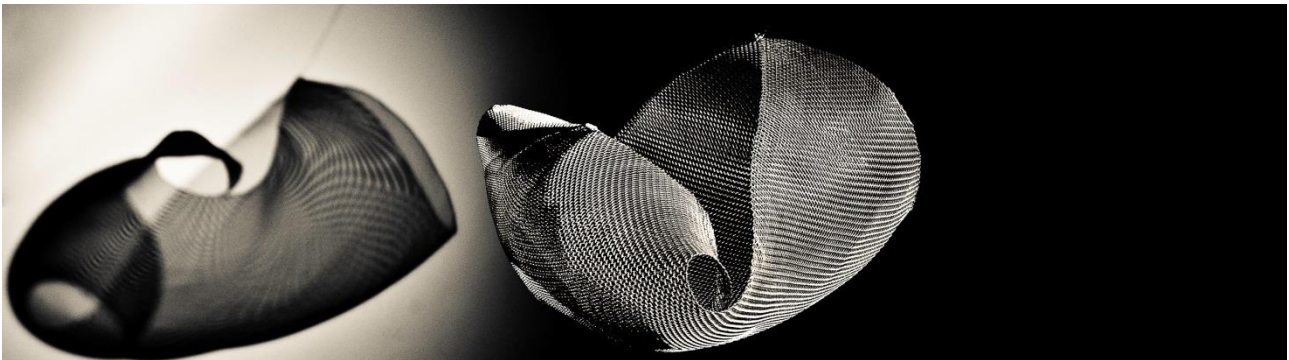
And so his *Macchine* are not only an abstract composition of elements distributed in space (with obvious formal debts to the concerns of Concrete Art) but are live compositions, both because they change form at the tiniest aerial or thermal stimulus and because they become “tools”, the “scenic apparatus” of a setting that, by way of an amount of adjustable light, allows the generation of abstract films.

His was an unstable, dynamic art. For Munari, the traditional pictorial image was too static and unchangeable, while he was interested in, not so much the analysis or the breakdown of a motion, as the dynamism of a form and the development of its almost immaterial representation. This is why in the excellent images of the *Macchine Inutili*, captured by the photographer Ada Ardessi, the elements appear as helicoidal forms, diluted in space, reverberating in the form of evanescent images of the formation of shadows⁷. Of course, this compositional “instability” has its deepest roots in both Eastern and Western classical culture, and is consolidated with reference to the poetics of Boccioni, Balla, and Laszlo Moholy-Nagy, perhaps the artist most comparable to Munari even from a methodological point of view⁸.

So the *machine* was, for Munari, a device, just like Moholy-Nagy's *Light Space Modulator*, the function of which was to create an abstract show of light and shade that was infinitely variable. Sadly, in many exhibitions an inadequate curatorial competence has not allowed a full understanding of the environmental potentiality of these works, which were made to compete more with cinema than with abstract art⁹. In one of the first reviews of the *Macchine Inutili* appeared in the press in 1934, the critic Luigi Pralavorio described the artist's creative effort in this way: “*In order to express novelty in an original way, there needs to be a completely new form of art. We have already discovered that cinema beautifully supersedes any other form of performance: we must find other forms of artistic expression to take the place of painting and sculpture. The Macchine Inutili are one attempt*”¹⁰. In fact, without the “cinematographic” and “environmental” components, from a conceptual point of view the *Macchine Inutili* would not be innovative with respect to the structures of Russian Constructivism or to the various kinds of mobiles.

The 1947 *Concavo-Convesso* (*Concave-Convex*) too has a dynamic and ambiguous form, given that it always has a different aspect according the viewers' observation point¹¹. Its form was obtained from a square or rectangular metal mesh, curved in such a way as to fix the corners at certain prearranged points within the

mesh itself. The volume obtained is reminiscent of some objects from that branch of mathematics known as topology, objects characterised by non-adjustable surfaces, such as the famous Möebius strips; however, at the same time they are similar to geometries that resemble natural forms, as for example fish, clouds, shells, and leaves [Fig. 2]. In this series of works too we can trace an attempt by the artist to distort a form that started out geometric; a “distortion” undertaken through an action aimed at testing the limits of material by way of an act that was never pushed to the point of irreversible deformation. *Concavo-Convesso* follows the same thread of thought as the one that determined the creation of the *Macchine Inutili*, in particular, it develops the same idea of constructing an abstract composition moving in space, the indefinite form of which depends on the temporal dimension. The object, the industrial mesh, was only a means for creating an environment in which to spark off moments for transforming an image. So *Concavo-Convesso* is not only a mobile but, rather, it is an environmental project in which the evolution of a form is visualised. The work, made by starting from an industrial product, has a transparency that is widely exploited with the aim of obtaining ever-changing abstract patterns, like small short films. This work has many points of contact with *Dual Form with Chromium Rods*, 1946, by Laszlo Moholy-Nagy¹² and can be considered as a coherent development of what was represented by the *Macchine Inutili*. By using a sequence of two or more *Concavo-Convesso* works, Munari demonstrated an interest in modular, almost fluid, development in space. The concept of spatial growth was, in many ways, a precursor of certain soft and sinuous forms, inspired by nature, of much contemporary architecture.



[Fig. 2]: *Concavo-Convesso* [Concave-Convex], 1947, installation at Estorick Collection of Modern Italian Art during the exhibition “Bruno Munari. My Futurist Past”, London 2012, photo by Pierangelo Parimbelli

The *Proiezioni* (Projections) too are part of a strand of thought that has two important aims: the dematerialisation of painting by creating light environments¹³, and offering the viewers a multitude of images that are no longer static. The *Proiezioni dirette* (Direct Projections), created from 1950 onwards, were made from materials that were “transparent, semi-transparent, and opaque, violently coloured or with extremely delicate colouring, with plastic materials that were cut out, torn, burnt, scratched, liquefied, incised and pulverised; with animal and vegetable fabrics, with artificial fibres, with chemical solutions¹⁴”; they were inserted into small frames for slides and are directly related to the works made in the Bauhaus school¹⁴. These are miniature works that are visualised with a projector [Fig. 3]. If the projector has a sufficiently strong lamp it is possible to install large-scale, luminous environments [Fig. 4]. “They are not colour photographs, they are ‘direct projections of materials’” the artist explained in the booklet that announced their first public showing – which was to be extremely successful – in the B24 architecture studio in Milan in October 1953 and then, in December, in Gio Ponti’s large hangar-studio¹⁵. The single or plural *Proiezioni dirette* (or even many direct projections at the same time) were only the initial step of a research that was to lead him, first, to the *Proiezioni a fuoco continuo* (Multifocal Projections), where the material emerged from the slide to allow the creation of different images according to the various focuses, and finally to the *Proiezioni a luce polarizzata* (Polarised Projections), which were absolutely innovative in the field of colour/kinetic researches. The effect of the polarizing film becomes visible when the uncoloured material is sandwiched between the filters; above all with the rotating movement of the one nearest the observer there comes about the virtual movement of the composition created by the artist. Munari planned both projections with the rotation of the polarising filter in front of the projector lens, and lightboxes with or without a motor, which the artist titled

Polariscop. In the second case, where an electric motor is not activated, the viewers are supplied with a transparent disk – the second polarizing filter – and it is suggested that they bring it near to their eyes and rotate it as they like while looking at the work. In this case the pictorial composition derives from the action of the viewers themselves who are operatively involved in the process of forming the image. The artist had the task of creating a framework, a working space with well-defined rules (a certain material, a given composition, rules for use); the viewers, instead, have the task of creating as they prefer, for sheer aesthetic satisfaction, a painting that is adapted to their own sensitivity, without constraints or impositions. By rotating the outer filter it is, in fact, possible to obtain from the 360 degrees of a complete rotation innumerable nuances of the breakdown of the light that traverses the colourless plastic material and the two layers of the sandwiched polarising filter. *"Each composition conserves its structure and its design but can have all possible combinations of colours"*¹⁷.



[Fig. 3]: *Vetrino per proiezione diretta* [*Slide for Direct Projection*], 1951, Fondazione Jacqueline Vodoz Bruno Danese, Milano, photo by Roberto Marossi



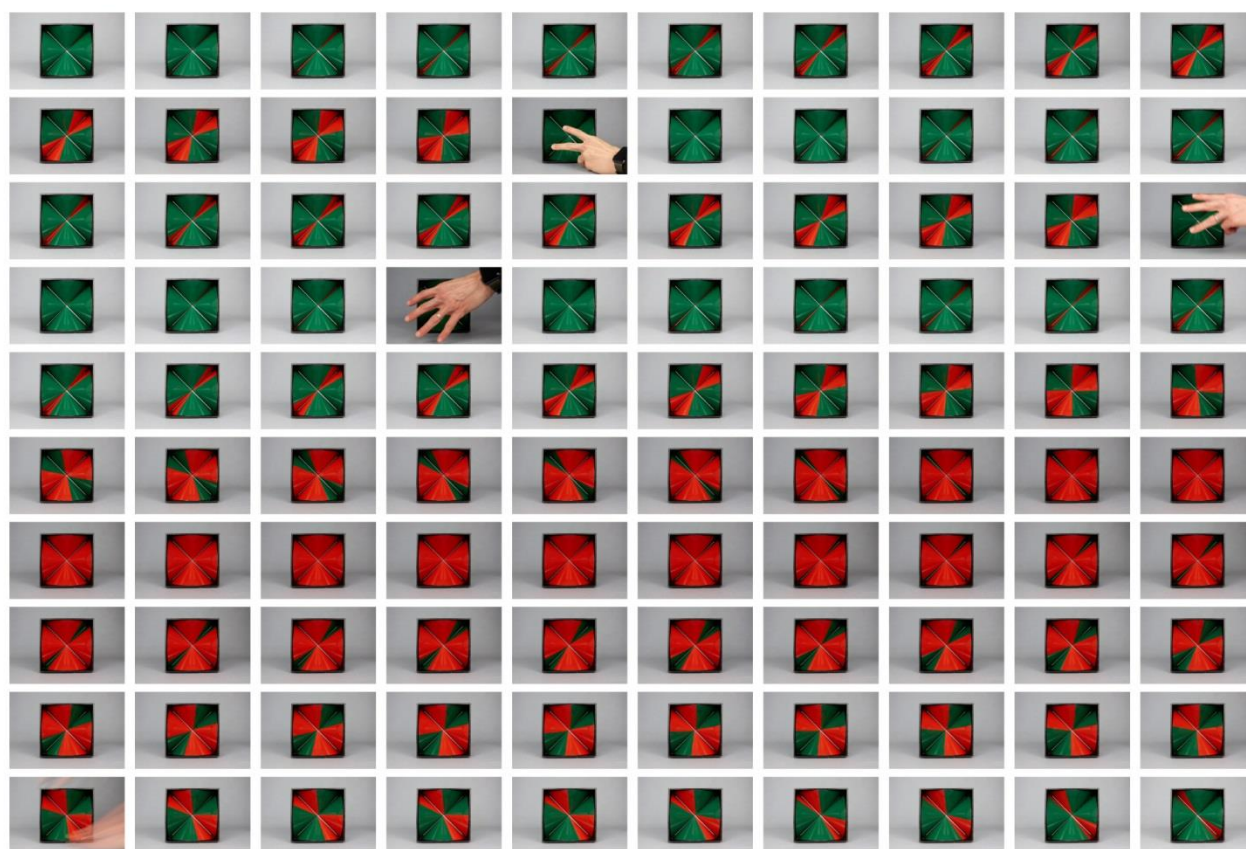
[Fig. 4]: *Proiezione diretta* [Direct Projection], Spazio Giovanni Bordino, Torino 2014, photo by Pierangelo Parimbelli

Many other works retrace the theme of the dynamism of a form. For example, *Ora-X* (*X Hour*), 1945, an old alarm clock that has been modified, has three half-disks of yellow, red, and blue transparent material fixed to its hands. This one-off experimental work was later developed into a far more minimal work produced in 1963 by the Bruno Danese firm in Milan. All the coloured half-disks have different diameters and decreasing proportions; by moving at different speeds they create, as a result of a technique of superimposition¹⁸, ever-changing coloured forms. The artist was to say that *Ora-X* “*is the time in which a colour is born and it dies after half an hour [...] / it is the mechanical growth of a form [...] / it is the colour of moments*”¹⁹.

Tetracono (*Tetracone*), 1965, is also a result of his researches into dynamism. In a cube, which in a certain sense is reminiscent of an old television set, four cones painted green and red rotate at different and regulated speeds (in the version with a motor), or else they are moved manually by the public, like a Buddhist prayer wheel at the entrance to a temple [Fig. 5, Fig. 6]. The electrical version uses four motors, one for each cone, the rotation of which, concentric for each couple of cones, determines continuous variations over a period of 18 minutes. Observation of the two complementary colours when they touch generates a purely chromatic sensation that tends to annul perception of the material that “transports” the colours. The work has an illustrious precedent in the Yin and Yang symbols and also has marked references to nature where nothing is fixed and everything changes. Munari tells us that the art of the past tried to describe nature fixed at a certain moment. But in nature there exist cycles, seasons, transformations. In the same way his art wants to make us see forms while they are being defined, by shifting the viewers’ attention onto the process of dynamic, unstable, and complex transformation, making use of technological elements or by means of physical forces.



[Fig. 5]: *Tetracono* [*Tetracone*], 1965, photo by David Reinfurt



[Fig. 6]: momenti del *Tetracono* [moments of *Tetracone*], 1965, photograph composition by David Reinfurt

The *Strutture Continue* (*Continuous Structures*), made for M.A.T. editions (Multiplication d'Art Transformable) created by Daniel Spoerri in Paris in 1959, are a group of anodised aluminium strips bent at the centre so as to form a right angle. Each element has a slender cut that goes from the centre of each side to the outer border. These slits allow the modules to dovetail. The forms obtained are always different because the subjectivity with which each user can create compositions entails a non-determinist variability in the final morphology of the structure. Munari spoke of "invented nature", because the compositions are combined together in the same way in which certain structures develop and grow in nature, influenced in their evolution by multiple environmental effects. The structure is infinitely combinable and can develop in a theoretically infinite space. The result, the artist claimed, was "*something between the mineral world and sculpture*"²⁰.

There was also a flexible, deformable, and malleable dynamism as in *Flexy*, 1968. This is an object with an aesthetic function that, while being art and not design, flouted the rules of the art market and was produced in an unlimited edition. *Flexy* is a work consisting of six stainless steel wires, each one metre long. Its initial form is that of a "soft" tetrahedron with curved lines. The object is contained in a cardboard box about one centimetre thick which, pierced at the front, also serves as the plinth for the object itself. *Flexy* is supplied with suction cups for smooth surfaces and has four small rubber rings that can run along the steel wires so as to vary the form of the structure. *Flexy* can be hung, fixed to the wall, exhibited on transparent shelves, or back-lit. It is an object that serves for experimenting with forms and has no back or front, right or left. Its topology can two-, three- or even four-dimensional. The work is representative of many theoretical aims, and is a cross-road for many disciplines: topology, industrial design, aesthetics, teaching, experimentation, and art.

In some of Munari's series of paintings, form is perceived as being unstable, as happens in the *Negativo-Positivo* (*Negative-Positive*) series where each part of the composition is either in the foreground or the background, according to the "reading" of the viewer²¹. Similarly, in the *Colori nella curva di Peano* (*Colours in Peano's Curve*) works there is a (theoretically infinite) development of the rhythms of the colours in the flat space inside the latticed structure of Sierpinski's fractal curve²².

Finally, we should keep in mind some works in which the function is decidedly overturned, which also causes a change of form.

Books become unreadable, a page becomes a theatre²³, and so there take shape – without words – abstract stories of lines, red cotton threads, cuts, holes, tears, caverns, transparencies, and there is even simulated the fog in Milan or a dark night²⁴. With his *Libri Illeggibili* (*Illegible Books*), handmade or produced in small series from 1949 onwards, books change their role and take on forms never seen before²⁵.

Sculptures can be placed in a suitcase, folded up like origami, and then replaced in their holder. The *Sculture da viaggio* (*Travel Sculptures*) were begun in the early 1950s. When they are taken out of their container they immediately develop into a three-dimensional object that is the visualisation of an aesthetic thought. A thought that once again plays with the contrast between geometries with convex and concave angles, between empty and full spaces, between jutting and re-entering volumes, between solid forms and shadows.

Copies become originals. Munari was the first artist to use photocopying machines for creative aims, the ones sold by Rank Xerox from the early 1950s. The first examples of *Xerografie Originali*²⁶ (*Original Xerographs*) date from 1963; the first public exhibition of them²⁷ was in Tokyo in 1965. Munari's idea was simple: during the scanning time he moved images, patterns, and textures. In this way he obtained deformed images, ones made unique by an unrepeatable creative act that in an instant made a new and original image thanks to the light drawing with surfaces and interweaving rather than with lines.

The *Macchine Aritmiche* (*Arrhythmic Machines*), made from 1951 onwards, are machines that lose their rhythm. Thanks to a worn spring-loaded mechanism they move in an unstable, random, and amusing way. The role of the machine has been overturned. Its movements, sonorous and humorous, have something anthropomorphic about them. It offers an entertaining show, it jumps clumsily, and agitates itself in an almost lifelike way up to the last moment²⁸.

Towards the end of his life, Munari summed up his critical view of Futurism in this way: “A mistake I have noticed in the Futurists, at least I believe it was a mistake, was to try to glorify dynamism with static techniques. If I make a sculpture that aims at conveying speed but is static ... well, it will be beautiful for other reasons, but mistaken. I must use cinema because it is a technique of movement. That is, where it seems to me they were mistaken was that they used compositional elements that were mental stereotypes. For example, that sculpture by Boccioni, *Muscoli in velocità*, is a static statue; while if I make something that moves then it gives me the idea of mutation²⁹”.

In all of Munari's work there is the constant attempt to go beyond the limits of a language that could no longer, in the modern age, be tied to motionlessness, to the form of a square, to the restrictive setting of the artist's studio, to consolidated techniques; it had, instead, to open up to real or perceived movement, to the multiplicity of forms and technological means, to chance, to an interactive environment, to architecture, to the techniques of industrial production, to the game of making, to the stimulus of imagination and creation. For this reason the importance of his art goes beyond the artistic currents of the 20th century, and his message, still today, is “fresh”, up-to-date, and even seminal.

¹ Guido Ballo, *Italian designers. With Bruno Munari there continues the gallery of people who have made their mark on the evolution of Italian artistic traditions*, in “Ideal Standard”, January-February issue, Milan, January 1965.

² “Albero/ l'esplosione lentissima di un seme”, in Bruno Munari, *Verbale scritto*, Il melangolo, Genoa 1992, p. 14. On this theme of the relationship between Munari's art and natural forms, the recent essay by Pierpaolo Antonello is interesting: “Bruno Munari's Natural Forms”, in P. P. Antonello, M. Nardelli, M. Zanoletti (editors), *Bruno Munari: The Lightness of Art*, Peter Lang, Oxford 2017.

³ Carlo Rovelli, *L'ordine del tempo*, Adelphi, Milan 2017.

⁴ Carlo Ludovico Ragghianti (editor), *Arte Moderna in Italia 1915-1935*, Marchi e Bertolli Editori, Florence 1967, p.328.

⁵ The definition is Munari's; published in “Diagramma di Munari”, *Pagine Futuriste*, supplement of the magazine “Orpheus”, year I, number 1, Abbiategrasso, December 1932.

⁶ Munari's role was noted and upheld publically by F. T. Marinetti in his introduction to the Catalogue of the show *Trentatré futuristi*, held in the Pesaro gallery in Milan in 1929. For this see Enrico Crispolti (editor), *Nuovi Archivi del Futurismo. Cataloghi di esposizioni*, De Luca Editori D'Arte-CNR, Rome 2010.

⁷ The photos by Ada Ardessi are kept in the ISISUF (Istituto internazionale di studi sul futurismo) archives in Milan, and are reproduced in many catalogues, including: Aldo Tanchis, *Bruno Munari*, Idea Books Edizioni, Milano 1986.

⁸ Munari's art shows surprising affinities with that of Moholy-Nagy, to the point where the Italian artist could be considered (being from the next generation) almost to have continued without a break the Hungarian artist's art researches. With regard to this, the portrait of Moholy-Nagy given by his wife Sibyl is very interesting: *Moholy-Nagy. Experiment in Totality*, It. transl. *Moholy Nagy. La sperimentazione totale*, Longanesi, Milan 1975.

⁹ For this theme see the detailed study by Matilde Nardelli “The Small, the Large, and the Moving: Bruno Munari and Cinema”, in P. Antonello, M. Nardelli, M. Zanoletti (editors), *Bruno Munari: The Lightness of Art*, Peter Lang, Oxford 2017.

¹⁰ Luigi Pralavorio, *Delle Macchine Inutili e di altro*, in “Cronaca Prealpina”, 28 May 1934.

¹¹ various photos of *Concavo-Convesso* were published in the magazine “Domus” in the triple issue for October-November-December 1947. In the notes there is this observation: “Not the least quality of this art is to be suitable for a photographic interpretation, where it lives with a new look”. Later on the work was presented at the Galleria Borromini in Milan during the run of a solo show that opened in the spring of 1948.

¹² M. S. Witkovsky, C. S. Eliel, K. P. B. Vail (editors), *Moholy Nagy. Future Present*, The Art Institute of Chicago, Chicago 2016.

¹³ The same idea was developed at the same time by Lucio Fontana who, from 1949 onwards, designed eighteen environments with lights and various kinds of materials. The work of Fontana was explored and recuperated in a philologically exemplary manner in the show *Lucio Fontana. Ambienti/Environments*, Pirelli Hangar Bicocca, Milan 2017. For this theme see also: Anthony White, “Bruno

Munari and Lucio Fontana: Parallel Lives", in P. Antonello, M. Nardelli, M. Zanoletti (editors), *Bruno Munari. The Lightness of Art*, Peter Lang, Oxford 2017.

¹⁴ Bruno Munari, *Le proiezioni dirette di Munari*, in "Domus", n. 291, Milan, February 1954, p.46.

¹⁵ Laszlo Moholy Nagy, *Painting, Photography, Film*, It. transl. *Pittura Fotografia Film*, Einaudi, Turin 1987. In the chapter "Domestic Art Gallery" the artist stated: "It is possible that future development will give great importance to projections of kinetic compositions, obtainable in all probability from the reciprocal intersection of rays and coloured masses freely floating in space".

¹⁶ Munari was to present his projections in various exhibitions on the theme. Among the many, mention should be made of: 1954 and 1955, MoMA, New York; 1955, the Galleria Nazionale d'Arte Moderna, Rome; 1957, the Galerie Christofle, Paris; 1958, the festival of avant-garde cinema, organised by Pontus Hultén at the Moderna Museet, Stockholm; 1960, the World Design Conference and the National Museum of Modern Art, Tokyo (non-stop projections); 1966, the Venice Biennale with a solo room (*Polariscop*). For a complete list see the online file of the site dedicated to the artist: <http://www.munart.org/index.php?p=15>.

¹⁷ The definition is taken from the notes, very probably written by Munari himself, for the cover of number 338 of "Domus" in January 1958, on which are reproduced 2 strips of polarised compositions. Previously "Domus" had already dedicated another cover to a polarised light composition, that of issue n. 334 of September 1957.

¹⁸ Munari used the technique of superimposing semi-transparent material in many works. For example, in the paintings inserted into slides for the *Proiezioni*, in the *Polariscop* works for the breaking down of light with polarised filters, or in the abstract and modular paintings from which he obtained the silkscreen prints for his 1958 *Los Alamos* portfolio, in the many covers made for Einaudi, in the *Libri Illeggibili*, and even in the performances for the creation of the *Xerografie Originali*.

¹⁹ Bruno Munari, *Codice Ovvio*, Einaudi, Turin 1971, p. 82.

²⁰ Bruno Munari, *Arte come mestiere*, Laterza, Bari 1966, p. 188.

²¹ In order to explain better the concept of annulling the traditional function of the background, Munari noted these comments on some of his preparatory drawings in the 1950s: "... in traditional drawing / the line is the contour of a figure / (the form of the background is not taken into consideration) / the line of the negativi-positivi draws from the two sides / it is the boundary between the forms / it is a boundary between the figure and the background / What is the figure? / what is the background?". These drawings have been published in Bruno Munari, *I Negativi-Positivi 1950*, Maurizio Corraini Editore, Mantua 1986, p. 1,5.

²² The definition of a limit value curve able to completely fill the space of a square, given by the Italian mathematician Giuseppe Peano (1858-1932), is only analytical. For computer science it can be defined as a recursive procedure, and it has various graphic visualisations. The one chosen by Munari was that of the famous Polish mathematician Waclaw Sierpinski (1882-1969) who, in the 1970s, greatly influenced the work of Benoît Mandelbrot. For further information about this see Benoît Mandelbrot, *La formula della bellezza. La mia vita da vagabondo della scienza*, Rizzoli, Milan 2014.

²³ For this theme see the recent essay by Jeffry Schnapp, "The Little Theatre of the Page", in P. Antonello, M. Nardelli, M. Zanoletti (editors), *Bruno Munari: The Lightness of Art*, Peter Lang, Oxford 2017.

²⁴ *Nella nebbia di Milano* is a children's book published by Munari in 1968 (Edizioni Emme) and in which two series of transparent pages create the effect of the reduced visibility caused by the fog of Milan, both in the city's traffic and in the park. *Nella notte buia* is also a children's book, published in 1956 by the Muggiani printers in Milan, where a series of black cards simulate the night. What happens in these pages is represented in blue, and a small hole – the opening of which, after a few pages, refers to a glow-worm in a field – simulates a small light which is an integral part of the story. In these books many inventions of the famous *Libri Illeggibili* are used for illustrative ends.

²⁵ The first exhibition of the *Libri Illeggibili* was held in February 1950, in the Salto bookshop in Milan. The editor Arnaldo Mondadori, in his presentation essay for the show, published in the second annual collection of *Arte Concreta 1949-1950*, wrote, "These 'illegible books' are the first examples of a new language that is closely related to cinema and music [...]".

²⁶ The first examples are to be found in the CSAC archive in Parma. See G. Bianchino (editor), *Bruno Munari: il disegno, il design*, Edizioni Corraini, Mantua 2008.

²⁷ The first demonstration and the first public exhibition of works made with a Xerox 914 was in Tokyo in 1965. See: Bruno Munari, *Xerografia. Documentazione sull'uso creativo delle macchine Rank Xerox*, Rank Xerox, an edition hors commerce, Milan 1970

²⁸ In order to understand the behaviour of the a-rhythmic machines it is useful to watch a short film, lasting five minutes, made by the artist and photographer Davide Mosconi in 1986, and produced by IBM; its title is *Aritmie Meccaniche* and, in the running images and the sounds captured, there is to be found all the poetry, delicacy, and humour of Munari's thought.

²⁹ Silvana Sperati (editor), "Emozioni e Sperimentazioni - A colloquio con Bruno Munari", in *C'era due volte... Munari o della creatività*, Rivista del Centro Studi Gianni Rodari, n. 8, anno IV, September 1997, p.4.