If one assesses the value of artists in terms of their historical importance rather than the market value of their works, Bruno Munari is undoubtedly one of the most significant artists of the twentieth century. His work was always innovative – and in many ways revolutionary – although those superficially acquainted with it might consider it somewhat fragmentary and spread too thinly across too many different experiences. However, through an attentive analysis of his oeuvre the fundamental coherence of Munari’s research is revealed, and the meaning of these various experiences emerges.

Munari first began to move in artistic circles during the late 1920s, adhering to the ‘Second’ Futurist movement led by Filippo Tommaso Marinetti – who immediately considered him to be the most brilliant figure of the new generation.

This phase of his work remains little known, despite the fact that it contained the seeds of his future aesthetic concerns and witnessed the emergence of ideas that were to preoccupy him throughout his career. Simultaneously, Munari conceived his ‘useless’, ‘aerial’ and free-standing machines, his anthropomorphic drawings, his gestural paintings, his abstract-geometric works entitled *The Frame Too*, experiments with tactilism and performance projects such as the choreographic score of 1935 *Dance on Stilts*. All these seemingly disparate works have discernable traits that link them together. For example, *Dance on Stilts* appears a three-dimensional transposition of his *Illegible Writings of Unknown Peoples*.

However, after the Second World War Munari never spoke to anyone in Italy about his Futurist experiences. He would pass over, or find a way to evade, direct questions – the consequence of which being that many were convinced he wished to deny his Futurist past, or at least that he no longer had any works from the period; yet this was not true. It was simply a self-defence policy in the context of a prevailing attitude that equated Italian
Futurism with Fascism. This was simplistic reductionism, considering that 'First' Futurism had enjoyed its most important moment before and during the First World War and, moreover, that Marinetti’s links with Fascism were neither total nor unconditional.

In truth, during the 1930s the Second Futurist movement was certainly not privileged by the regime, as illustrated by the small number of exhibitions that were organised at this time, and their humble settings. The decidedly anti-German sentiments of Futurism also certainly counted against the group.

I discussed this topic on several occasions with Munari, managing to get him to explain his experiences to me, and to show me works from the period in question. He was happy to find an interest on the part of an art theorist who, among other things, had spent her own youth in a totalitarian state and who could therefore understand its dynamics. I believe this was why I was able to convince him, after a long period of time, to exhibit his Futurist works in an exhibition I curated at UXA Studio d’Arte Contemporanea in Novara entitled Projects and Objects (1986).

To orient ourselves within his oeuvre it is necessary to follow its principal routes: namely, the exploration of the perceptual and sensorial faculties, and the search for ways to overcome objective limitations. Through this analysis one can identify the connecting thread linking all his works. That is to say, in the works of Munari one can always note the same visual language, one continuously elaborated in every possible variation with the utmost simplicity and the organic quality of a specific and known thought. The artist was well aware of this coherence within his work and indeed it was he – albeit later – who defined the differences between art and craft, style and styling.
The Difference between Art, Craft and Design, and the Use of the Creative Method

The sketch entitled Motorcyclist of 1927 – one of the artist’s earliest works – was folded into four since Munari carried it in his pocket in order to be able to use it as an example during the heated discussions then taking place between young Futurist artists. Drawn on both sides of the paper, one image represents a speeding motorcycle, the other a sketch of the same image as the basis for a possible publicity campaign for Pirelli. The work is testimony not only to the ongoing debate within Futurism concerning the question of dynamism and the expression of movement, but also reveals that by this stage Munari was already distinguishing between the language of free, artistic creativity and that of applied art, for which a more methodical approach is necessary. Munari was later to analyse this issue in his books.

However, the adhesion of Munari to the Futurist movement was to become complex. Compared to the majority of his peers, who had returned to painting, Munari embraced the initial Futurist conception of a dynamic and ‘total’ art, aiming to engage all the senses. Unlike many of his colleagues, whose work simplified complex ideas during the evolution of the image, Munari’s work surprised the viewer by starting from an essential concept and going on to explore it from all possible perspectives and in every possible form.

This means that any approach to his aesthetic research must be multi-directional. Munari himself stated that it is necessary to think in at least three dimensions.
The Concept of Art Developed in Space

From the beginning of his career Munari aspired to transcend the expressive instrument, himself, and the limits of humanity. The break with the idea of an art limited only to painting, sculpture or an object of some kind occurred to Munari as early as 1930 when he began to create his first *Useless Machines*. These were also the first attempts to conceive of art as an environment: experiments to which one might even apply the term ‘installations’.

There have been many discussions concerning the dating of these works. The originals no longer exist; even the *Aerial Machine* exists only in the mass-produced version of 1971. The debate focused primarily on the question of whether the idea of a suspended and mobile work had first been conceived by Alexander Calder or Munari. This was a rather irrelevant matter since the two artists approached it in very different ways. Moreover, as Munari often observed, objects such as wind chimes – which are suspended from the ceiling and generate sounds by their movement – have existed for centuries. The controversy was resolved when, as part of the 1995 exhibition ‘Making the Air Visible’ in Zurich, documents were exhibited showing that Munari had created the first *Useless Machine* in 1930 – three years before Calder. Nevertheless, the truth of the matter is that the idea had occurred to both artists independently since at that time neither was aware of the other’s research. Calder and Munari only met after the war, and became such good friends that they exchanged works.

The idea of a suspended, mobile object came to Munari in 1930 when he and Ricas (Riccardo Castagnedi) were renting premises in Milan for their graphic design studio R + M. At the end of the corridor was an empty room that Munari wanted to use for the construction of an artwork. In the middle of the room, he hung an object that represented a machine of the simplest kind. He told me that lit the object in the dark room in such a manner that...
it would create a play of shadows on the walls. Aiming to associate the piece with the philosophical concept of the uselessness of the artwork, he chose the paradoxical title *Useless Machine*.

This title is often misunderstood, being interpreted in an ironic sense. This misunderstanding occurred almost immediately because, in the show where they were first exhibited, his *Useless Machines* came into conflict with the exaggerated enthusiasm of the Futurists for mechanisation. However, Munari had no intention of ridiculing the concept of the machine, but simply wanted to transpose it into an artistic context, as is clear from his 'Manifesto of Machinism' of 1938, which was published in the *Bollettino del M.A.C.* in December 1952.

**Paradox and a Taste for the Absurd**

The use of paradox was central to all aspects of Munari’s activity, not only that of an artistic nature. He employed it in order to undermine banal stereotypes and to stimulate mental agility. In visual terms it was reflected in his juxtaposition of geometric shapes and organic forms.

In fact, this is the key to interpreting his anthropomorphic or zoomorphic drawings, which on the one hand explore the ambiguity of perception – leading to the spatial uncertainty of the *Negative-positives* as well as abstract designs called *Ancestors*, in which one is able to discern a face – and on the other leads to an aesthetic use of writing, seen as a positive stereotype and an integral element of the work. The emphasis that Munari placed on paradox is clear if one considers of the titles of his works: *Concave-convex, Negative-positive, Illegible Books*, etc. This aspect of his work is often overlooked or misinterpreted, despite encapsulating Munari’s ability always to see things from opposite sides and to explore each topic from different perspectives.
Writing and Visual Communication

The theme of writing, or even the alphabet itself, was extremely important for Munari. It was present in his earliest works, drawing on the Futurist experience.

Writings often complete his work by moving the visual concept to different levels of reading. In this perspective, the ABC Dadâ of 1944, comprising a series of images dedicated to the letters of the alphabet, can be interpreted as a declaration of intent. Not only do the compositions present his entire expressive vocabulary of organic materials, gears, real objects, prints of objects, patterns and nets of various fabrics, but the illustrations are complemented by verses - word games dedicated to each letter.

In this work, then, it is possible to explore his entire phraseology, but it is also important to note the influence of Enrico Prampolini, the only Italian member of the Dada movement, who was an important reference point for Munari.

Munari told me that the work was born almost by accident. He had been commissioned to create an alphabet book, but when he completed the project he realised that instead of a book he had created a work of art. So he put aside the ABC Dadâ and made another book following a suitable design methodology. Again, this incident shows how important it was for him to distinguish between art and design.

Munari summarised the relationship between the two forms of creativity with the phrase ‘one thing leads to another’. Sometimes, when creating a piece of design or graphic work, he would take inspiration from a work of art that he had produced on an earlier occasion. A case in point is the way in which his idea for the construction
Munari explored the potential of writing throughout all his fields of interest. For instance, he investigated the extent to which it is possible to compress and reduce the letters of a word without compromising legibility, as well as tested the limits of the human faculty of perception in the process of identifying the subject represented, allowing the user to complete a picture using their own imagination and intuition.

Using Humble Materials to Discover new Sensory Dimensions

Munari’s Tactile Board of 1938 was not conceived as a picture – unlike the first such piece created by Munari in 1934, following Marinetti’s example – but comprises a series of materials arranged along a piece of timber, over which ones fingers walk, becoming marked by the rough surface of sandpaper, enlivened by an encounter with the movements of small velvet see-saw, slowed down by a surface studded with nails, then speeded up once more, gliding over a strip of plastic. The whole arrangement is completed by annotations indicating how to proceed, as if it were not only a sensory journey but a musical composition.

At that time it was rather unusual to use materials such as cloth, fur and fragments of gears or clock mechanisms in the creation of artworks, yet they occur frequently in the work of Munari, representing a desire to expand the
artist’s range of expressive possibilities. The use of humble materials proposed by Giacomo Balla and Fortunato Depero in their 1915 manifesto ‘Futurist Reconstruction of the Universe’ influenced Munari to the extent that he even considered vegetables to be possible vehicles for artistic expression. The body of the free-standing *Useless Machine* of 1934 is, in fact, constructed using the hull of a dried gourd.

Humble or found materials, either sensual in nature like feathers, fur or scraps of cloth, or ordinary, such as organic matter, industrial sheeting and mechanical elements – used either for their tactile quality or their structural characteristics – distinguish all of Munari’s artistic work. It must be emphasised, however, that he always used them in a precise and restrained manner, employing only the bare essentials required to identify the material. It seems that even in this case he wanted to explore the minimum conditions necessary for recognition. This expressive minimalism led him to develop a new technological spirituality, and to humanise the machine.

**Anthropomorphism and Zoomorphism of the Machine**

Munari’s *Insects*, constructed with metallic wire covered in cloth, were to inspire the later objects called *Sensitives*, made from pieces of coloured wood and springy wire. In a certain sense they are distinct from, yet complement, his *Useless Machines*, being elementary mechanisms that tremble at the slightest touch of the hand.

During the early 1950s this line of experimentation led him to construct the *Arrhythrias*: spring-driven mechanical objects that had to be manually wound up. Munari transformed the predictable and repetitive movement of the clock mechanism by incorporating it into structures that affected its functioning, leading it to produce a succession of unexpected and surprising movements, jolts and jerks.
In his ‘Manifesto of Machinism’ Munari wrote: ‘Artists must take an interest in machines, abandoning the romantic brushes, the dusty palette, the canvas and the stretcher; they must begin to learn the anatomy of the machine and the mechanical language, understand the nature of machines, distract them in order to make them work erratically, create works of art with machines themselves, with their own parts.’

As in the earlier anthropomorphic or zoomorphic drawings, Munari succeeds here in managing the paradox of abstract and figurative forms, hybridised with a mechanism, obtaining a result that gives the idea of a living, domesticated being. The audience, attracted by the mechanism of the object, desires to engage with it and wind it up, inevitably becoming part of the work: indeed, almost a co-author.

Involvement of the Spectator

To involve the audience in the creation of art was the strategy used by Munari in order to make the public aware of modern aesthetic problems. Like many intellectuals of his generation, he realised that visual culture was far from finding acceptance among the masses and seemed incomprehensible to many, often conditioned by preconceptions or a lack of education about such matters. Although Munari was not naive, in the sense that he had no illusions about human nature (something illustrated by his statement ‘art is for everyone, but not for all’) he developed several strategies that aimed to capture the interest of the individual and encourage him or her enter the complex world of the visual arts, fostering empathy and immediate perception. One of Munari’s best-known techniques in this regard was his employment of the mechanics of the game – a characteristic often used by his detractors to belittle his work. The nature of play is such that it leaves no-one indifferent and speaks to
everyone’s inner child, awakening the desire to learn in a joyful manner. Many adults, however, believe that play should not be part of a work of art, and this prejudice sealed the fate of many of the objects which Munari gave away in his youth to people who disposed of them after an initial burst of enthusiasm, as one does with old toys.

These interactive objects, which the users engaged with in an almost physical way, were an effective means of including the viewer in the world of art. In exhibitions that I have curated, I have witnessed scenes of real excitement. However, the idea of a total art was increasingly crystallising in Munari’s mind, even being explored in the opposing contexts of the virtual and the real. I still remember with pleasure an object that had always been in Munari’s studio, and which he referred to as the sculpture for all the senses: a coloured, scented, soft and elastic sphere that also produced a range of sounds.

Alongside this research Munari began to develop the concept of art as a space of which the viewer inevitably formed a part: by entering into it one conditions it, rendering it changeable and always different. As he often said to me: ‘I try to create works without spatio-temporal limitations, where images are formed and destroyed, and it does not matter if they physically exist, but that they enter one’s memory as an emotional experience.’

**Connections with the European Avant-Gardes**

Munari was very familiar with the international avant-garde art of the time. Despite what is now generally believed it was almost easier to obtain cultural information then than it is today. He was particularly interested in Russian Futurism and that of Central Europe, and many of his works responded to matters raised by artists in other countries, particularly those relating to issues of space, time and light.
Munari’s first drawings – figures of conical form – evoke the works of Malevich or Depero. Particularly in relation to his early work, one can reconstruct the broad spectrum of his reactions to new ideas and new interpretations of the issues tackled by the avant-garde. He was extremely attentive to what was happening in the art world and it is a dominant characteristic of his work that much of it appears to constitute a response to aesthetic problems posed by other artists. Munari understood art as a kind of dialogue, a form of communication – and not only with his peers. Some Useless Machines are a response to the spatial dilemma of El Lissitzky’s paintings, for instance, whilst his abstract paintings and works such as The Frame Too, begin to try and create a visual ambiguity stimulated by the experiments of Hans Richter, Paul Klee or Mondrian. There are several obvious similarities between his works and those of Man Ray, references to forms characteristic of the work of Hans Arp, and many correspondences with the research of the Bauhaus. Wassily Kandinsky is often cited as an influence, but Munari certainly took inspiration from others. In fact, he criticised Kandinsky’s conception of space, describing his abstract compositions as indecipherable still lifes floating in indefinite voids.

Munari nurtured an iconoclastic spirit in relation to the classical-modern idea of art, according to which one must always return to a stereotyped, recognisable and identifiable artefact – a product necessary for business ends. He ranged with ease from abstraction to the figure, from matter to the word, and from painting to the object. The connections between his various ideas are regulated by the consistency of his aesthetic philosophy. Coming to conceive of the artwork as environment anticipated an expressive attitude that was to become widespread following the Second World War. This creative freedom already seems projected toward the third millennium.
Exploration of Various Forms of Movement

One of the most important themes of Munari’s work is that of movement, and it is no coincidence that Frank Popper numbered him among the pioneers of kinetic art.¹

Munari analysed movement in all its visual aspects, distinguishing between the representation of it, the reality of it and the illusion of it. He explored movement both in its virtual aspect and in reality: drawings and paintings of machines, motorcycles and figures in motion being contemporary with his mobile objects. He often attempted to combine chance movements with those generated intentionally. However, his most important revelation related to illusory movement, present in all his works concerning the study of the possibilities of polarised light.

Although he used the electric motor for some of his objects in a marginal fashion, the most essential movement for him remained that which was spontaneous and random, such as a change in the air, flowing water, or even the intervention of the spectator. This predilection stemmed from an inner wisdom gained during the course of his youth, and was clearly derived from Zen philosophy.

Expansion and Ambiguity of Space

Munari’s research intended to make the invisible visible, and to explore spatial intersections. In his works we frequently find such intersections in the form of an X, often combined with the number 3, symbolising the relationship with space. Not coincidentally, the net is a constant presence in his work. For example, we find it in works of graphic design such as the cover for Marinetti’s Poem of the Milk Dress, as well as his objects and even

the structure of some of his paintings. In his work the net symbolises the shape of space-time geometry, but also the different structures of nature. In his continual oscillation between the organic and inorganic, the figurative and the abstract, he aspired to find the connections that link each element of the universe.

Although conceiving a new way of being an artist, Bruno Munari never denied his connection with classical aesthetics and engaged in a dialogue with the art of the past, using precise mathematical and harmonious relationships, although questioning the possibility of establishing what determines the context and the creation of the artwork. Munari reinterpreted the sixteenth-century idea of the artist-scientist for the modern era. He had a deep understanding of geometry and was aware of the latest mathematical theories and the newest technology, incorporating it into his research. However, he was able to interpret this knowledge in his work in a poetic form. Not for nothing did he love to repeat the Japanese saying that ‘we must know the rules in order to break them’.

From the beginning of the 1940s he sought to develop the concept of the *Useless Machine* by incorporating spinning movements, using the spring-driven, manually-wound mechanism of a gramophone. In one such work the moving part turns like a carousel with a descending motion, whilst at the bottom three geometric forms made of folded and polished aluminum are attached to rotating rods. Today the material has become slightly tarnished but it is still possible to observe the reflection of the surrounding environment in these moving forms – deconstructed, mutable and multiplying itself in the surfaces of the geometric elements. Munari was never satisfied with the result and kept changing the rotating parts, only considering the work complete in 1953. He made another attempt to include the environment within the work in this manner, of which only photographic evidence remains: one of the first *Useless Machines*, which included a polished, reflective sphere.
From the Projection of Shadows to Direct Projections

Attuned to contemporary issues, Munari also addressed the question of the use of electricity in the work of art. One must remember the significant role played by lighting not only in his *Useless Machines* but also his other suspended objects, which through this means revealed patterns formed by their shadows.

At the end of the 1940s Munari created a work-environment. In a dark and possibly 'white cube'-style room, light radiated through a piece of industrial metal mesh, folded according to a mathematical precept: a work Munari entitled *Concave-convex*. The object, moved only by air currents or the touch of the visitor, created moiré patterns not only within itself but – most importantly for Munari – cast a complex, dynamic and mutable image onto the walls. The object was a two-dimensional square, curved in such a manner as to become three-dimensional, and expanded to infinity through the shadows that were thrown into the surrounding environment, suggesting the notion of the curvature of space. The obvious relationship of this object with the principles of non-Euclidean geometry did not lessen the atmosphere of mystery that permeated the environment, created by a skilful juxtaposition of form and structure, shadow and light.

Munari exhibited the *Concave-convex* in 1946 in Paris, but the fact that it was returned to him disassembled and folded up – that is to say, useless – is evidence that the work was completely misunderstood. In 1947 Munari reconstructed the object and also produced variants of rectangular form, experimenting with more complex environments.

As was typical of his research, he explored the expressive possibilities of the various configurations, studying...
them from different points of view. Inspired by the problem and of fractals and nature, he created analogies between organic and artificial structures: for example, the veins of dried leaves and metallic honeycomb mesh; or sticks of bamboo inserted into nylon which, held taut by the rigid internal scaffold, formed a cloud-like structure.

**Painting with Light**

Light is an essential element of the creative concept, which not only has the traditional symbolic content, but is above all a powerful sign for the arts and the modern world.

As an initial experiment, Munari began to ‘paint’ light, as evidenced by several works of the early 1940s such as *Yellow Points* of 1940 and 1942. However, after a series of such paintings Munari no longer found it sufficient to depict light (in a similar manner to his elaboration of the theme of movement) and began to explore the possibility of using light directly.

With his *Direct Projections* Munari used electric light as the equivalent of a painterly medium, using a small image enclosed within the frame of a glass slide which, when projected, resulted in the creation of monumental, dazzling frescoes. Such a technique enabled Munari to reconstitute the structure and intensity of colour, emphasising the space and volume of the luminous forms. These projections express one of the concepts dearest to Munari – that of ‘making something out of nothing’ – which he stated was the meaning of his surname in Japanese. In this case, mixed-media works placed between two pieces of glass were dematerialised by light and reconstructed in an impressive size. The important principle here was not only the transposition of miniature, physical, mixed-media
compositions, paintings or collages through immaterial light, but the intention of making ‘murals’ able to fill rooms with colours, or paint either a dome or the facade of a building with light. Munari subsequently introduced a kinetic element using bifocal slides, or projecting his slides in a rhythmic sequence, creating something approaching a fragmented film. But perhaps the solution that satisfied him the most was that discovered through the use of polarised light.

In his exploration of the expressive possibilities of electric light Munari was undoubtedly inspired by the pioneering experiments of other artists. Finding Moholy-Nagy’s Light-Space Modulator of 1930 too mechanical, he was instead attracted to the pianos and organs designed by artists such as Alexander Scriabin (1872-1915) that envisioned the use of a ‘light keyboard’, combining colour and sound in the performance of his work Prometheus. Slightly later, the Russian Futurist Vladimir Baranoff-Rossiné (1888-1944) created his Optophonic piano, which generated sounds and projected rotating images onto the walls or ceiling by directing a bright light through a series of filters, painted and revolving glass discs, mirrors and lenses. The keyboard controlled the combination of the various filters and discs. The variations were controlled by a photoelectric cell and the pitch by a single oscillator. The instrument produced a continuous diversity of sounds, accompanied by rotating kaleidoscopic projections, the colours and rhythms of which were strictly integrated with the music. The Czech Futurist Zdeněk Pešánek (1896-1965) and Erwin Schulhoff (1884 -1942) created audio-visual sculptures in an attempt to blur the boundaries between the realms of music and the visual arts. With his Spectrophon piano, Pešánek realised a colour-generating keyboard and an apparatus for projecting kinetic compositions of coloured light onto screens, creating original, abstract, luminous paintings.

For Munari, the notion of using the slide projector as a means of creating his light installations was a development of ideas explored by another Czech Futurist, Jíří Kroha, whose architectural designs for houses for the poor incorporated the projection of works by major artists onto the walls of the buildings to obviate the need for hanging actual works of art.

Confirmation of the connections with the ideas and research of these artists came with the presentation of A Spectacle of Light, designed by Munari for a 1979 production of Scriabin’s aforementioned symphony. Munari’s contribution to the theme and originality of this production was marked by the fact that it did not involve the use of colored filters or other devices, the colours of the light being determined solely by the different light sources used.

The Colors of Light

Munari used the technology of powerful slide projectors to create environments painted with light, anticipating contemporary video installations. This idea became the starting point for deeper research into the use of electricity as a light source able to dematerialise the artwork and reconstruct it in a more evanescent form.

During the 1950s Munari’s experiments with polarised light led him to attain the goal he had set himself. His discovery of the ability of Polaroid filters to break light down into the colors of the spectrum opened up vast possibilities for experimentation. In this case, the compositions sandwiched between two pieces of glass were created with folded, transparent sheets that were sometimes also scratched, with a Polaroid filter as a background. Only later did black geometric elements enter into the compositions. Munari projected these slides turning another Polaroid filter in front of the machine. For this purpose he designed a rotating device, but was troubled by the
resulting kaleidoscope effect, and so often turned the filter manually.

Light and colour, electric light used as an alternative to the artist’s pigments, but also as an allusion to the colours of the spectrum scattered by a Polaroid filter, almost recalls a musical composition, and its temporal extension. The evolution of the illusory movement in these Projections of Polarised Light serve to give an idea of the depths of space in constant transformation. We must also highlight the fact that in them the illusory movement also creates virtual volumes and spaces that are perceived by displaying what might be called parallel space.

Through such work Munari anticipated by at least half a century current visual concerns.

Unfortunately, many works have not survived Munari’s Futurist period – partly because at that time the commercial value of his works was not foreseen, partly because having decided to solve an aesthetic problem Munari felt no need or motivation to repeat it, and partly because many of his works were destroyed or have been lost. However, his major works remain, albeit often only in one example, and can still adequately illustrate his creative process and the dynamics of his thought.

It is interesting to observe how that which was once cutting edge has become neglected, yet the past anticipates the future, as a decisive factor, since the present is always transient. When works such as those of Munari are produced, they are met with a sceptical and wary eye, and are often undervalued or not even considered as art. Many of Munari’s opinions and choices brought him into direct conflict with the structures of official art. Despite this he has become a legendary figure and a model for many subsequent generations of artists, to the extent that he has been described as a Leonardo da Vinci for the twentieth century.²

The story of Bruno Munari is always an opportunity for knowledge and inspiration.