

MUSIC AND THE PLASTIC ARTS
IN CONQUEST OF TIME AND SPACE

Words and colors are not alike,
Nor are the eyes and the ears.

In upholding the sensory principle of the classification of art, La Fontaine, consciously or not, took account of a tradition beginning in antiquity. The “philosophical century” was to have introduced a conceptual criterion, that of time and space. James Harris and Lessing are among the most ardent proponents of the division of art into the spatial and temporal. This criterion has played an important role in aesthetics. Among the countless systems of art classification developed in the course of the last two centuries, it has held a place of prominence to this day. Even those theorists who seek to soften the opposition between music and literature on the one hand, and the plastic arts on the other (Oskar Walzel), and who stress the union of space and time in the perception of the aesthetic object (Mikel Dufrenne), do not abandon the fundamental distinction between temporal and spatial art.

Translated by Robert Blohm.

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In order to protect the criterion of time and space from the drawbacks to which it is subject when it is used in the classification of art at the level of perception, we propose to replace the notion of perception by that of communication. We then have works of art which are *communicated* in space, and those which are *communicated* in time (necessary communication in both space and time being unique to, and the distinctive feature of, the *arts du spectacle*).¹ This operational formula does not, by any means, disregard the role of perception in aesthetic analysis, nor does it exclude the frequent connections between time and space in a spatial or temporal work of art. On the contrary, it will make easier our task of bringing to light and giving an organized account of attempts at going beyond the temporal medium in works of music, and the spatial milieu in plastic constructions, which have permeated contemporary artistic life and constitute a very significant aspect of it.

I

Music is a characteristically temporal art. By saying that its works are communicated in time we mean not only that time is *essential*, but also that it is *sufficient*, for their communication. The performance of a symphony or a song involves a certain span of time determined, to varying degrees, in advance. A musical composition is a succession of sounds in time, and music is nothing other than the art of organizing their temporal development.

Although they work in an essentially temporal medium, composers have never been indifferent toward the implications of space. Many of them, today as well as in the past, seem decidedly under its spell.

As soon as we speak of space in the context of music, we should, in order to avoid misunderstandings, make a distinction between real and imaginary space. The latter is, to a greater or lesser extent, discernible in a musical work according to the ingenuity of the composer, the imagination of the listener, and

¹ Cf. *Littérature et spectacle dans leurs rapports esthétiques, thématiques et sémiologiques*, Varsovie, Editions Scientifiques de Pologne, 1970 (in French), pp. 11-17, 34.

the accepted musical styles and forms. A complete storehouse of rhythmic and dynamic effects, as well as those of accompaniment, has been developed throughout past centuries—crescendo and decrescendo, accelerando and rallentando, rinforzando and *morendo*—in order to suggest spatial expanse and to represent change of position, in short, to bring about the imagination of movement. It is not at all surprising that music was called the *scientia bene movendi* and that the word “movement” made its way into musical terminology, indicating sometimes the progression of sound toward bass or treble, sometimes the speed at which the elements of a measure are counted. Many devices have been used to simulate echo, reverberation, and reflection.

But in spite of all these methods, based upon rhythmic and dynamic contrasts, of giving the listener the illusion of a spatial unfolding (supposed approach or retreat of the sound source, sound undulation) we do not leave the imaginary, the space *represented* by music—sometimes called musical space.

What interests us exactly is real space, i.e. physical space, used as an artistic medium in the communication of musical works. Polyphony, especially in the vocal area (the mixing of different voices) as well as the positioning of musicians with regard to the audience present some possibilities for the diversification and “spatializing” of the effects of sound. These “topophonic” possibilities, it must be said, have never been used to their fullest extent. For example, the evolution of the spatial arrangement of the orchestra was moving, until the beginning of the twentieth century, toward the uniformity of all the sounds in an ideal synthesis where the individuality of the sound sources is removed.

Almost complete sound uniformity in the presentation of music was realised toward the end of the nineteenth century owing to the invention of the phonograph and, a short while later, the radio. Records, speakers, radio transmitters, and tape recorders reproduce music as heard by an “ideal” ear. Surely one ought not ignore the experiments that have been made in the field of polyphonic recording. Sound engineers have produced some interesting results by increasing the number of microphones, changing their arrangement, and resorting to tape editing techniques. It is nevertheless true that the effects produced by such means are in the domain of imaginary space, a simulated

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space, while the real space of hearing remains monotonous and flat. Stereo, with the aid of multiple speakers, tries to break this monotony in the perception of recorded music. But, to the extent that it lies outside the scope of the creative considerations of the composer or the performers, stereo is but a technical means of partially restoring the impression of acoustic relief characteristic of music heard in the concert hall.

At this point account must be taken of certain trends in contemporary music where the aim is to go beyond the temporal medium. Although these attempts can be interpreted as a reaction against the spread of mechanically produced music, they benefit fully from modern techniques (magnetic tape, stereophonic sound) while showing, consciously or not, a partiality for sixteenth century polyphony (the Venetian school). What is sought is music which, by the desire of the composer, makes the maximum use of physical space in the act of communication, involves a spatial unfolding, and explores the possibilities of space as a self-contained and "polyvalent" artistic medium.

The efforts to endow musical works with a new dimension coincide with the advent of electronic music and the use of magnetic tape; but it should be noted that the creators of these "spatial" experiences often return to traditional instrumental and vocal music, that is to say, music conveyed "live." Let us recall some facts and dates.²

Bruno Maderna was perhaps the first to attempt the union of magnetic tape with instruments in *Musica su due dimensioni* (1952). Earle Brown created his *Octet I* (1953) for eight sound tracks. *Déserts*, by Edgar Varèse, were composed for fourteen wind instruments, percussion, piano, and magnetic tape. In his celebrated *Gesang der Jünglinge* (1956) Karlheinz Stockhausen resorted to the electronically treated human voice carried over five groups of speakers surrounding the audience. *Poésie pour pouvoir* by Pierre Boulez (1958) was written for solo, orchestra, and magnetic tape; *Au-delà du hasard* by Jean Barraqué

² Among the modern forerunners of this movement, one could not forget Béla Bartók. In his *Musique pour cordes, célesta et percussion* (1936) two string instrumental ensembles are separated on the stage by the piano, the percussion, the harp, the xylophone, and the celesta. The score of his *Sonate pour deux pianos et percussion* (1937) includes a plan for the spatial arrangement of the performers: the percussion is placed between the pianos which are well separated from each other with their key-boards facing the audience.

(1959)—for one vocal group and four orchestral ensembles. Luciano Berio intended his *Différences* (1959) for five instruments and four sound tracks. While in *Kontakte* (1960) Stockhausen used, independently of tape, piano and percussion, in *Carré* (same year) he used four choruses and four orchestras. Finally, there is Andrzej Dobrowolski who composed, in 1964, his *Musique pour orchestre à cordes et quatre groupes d'instruments à vent*.

In order to conquer space, instrumental, vocal, and electronic music are made to assume different relations with respect to one another; they are combined in an extremely wide variety of forms. 'Topophonic' studies are essential to such experiments. The listener finds himself amid several sound sources which are quite distinct and knowledgeably placed around him; he perceives sounds which converge or diverge and interfere with each other. But what matters more and distinguishes the results of this research from simple stereophonic sound is that the arrangement of the sound sources is set by the composer at the time of creation. It is he who, in his creative act, decides their distribution and composes music particular to each. In this way he determines the movement of sounds in physical space; he "prescribes" for them certain directions with regard to the audience. We have, then, music which is made for spatio-temporal presentation and which organizes not only time but also, in a large measure, the spatial milieu within which it is performed and heard.

Stockhausen wrote *Gruppen* (1957) for three orchestras (of thirty-six musicians each) placed on three sides of a rectangular hall. The sound comes to the listener from the left and the right sides as well as from the front and—this should be emphasized—there is a constant dialogue, a constant exchange of musical substance, between the three orchestras which are conducted separately and play together or in turn. Music becomes mobile not only in its sonority but also in its structures. The work cited is but a rudimentary example of the functioning of music in space. Stockhausen has many a time emphasized the necessity of a specially arranged hall for the presentation of what he calls spatial music (*Raum-Musik*). He envisages this hall "in the form of a sphere with speakers all around; at the center there would be a platform for the audience, so that the music composed for this setting may come to the listener from above, below, and all directions." The German composer has also conceived of a concert

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hall with several mobile stages for the orchestral groups, with an eye to inducing interference between the instrumental music and magnetic tape.

Not wishing to wait until the architectural structures called for in their artistic conceptions are built, composers are adapting existing halls to the needs of spatial music. In Dobrowolski's *Musique pour cordes, deux groupes d'instruments à vent et deux haut-parleurs*, twenty-six string instruments occupy the stage, while the wind instruments are divided into two groups, one to the right and one to the left of the audience, and the speakers—installed below the ceiling in the two far corners of the hall. *Terrêtektorh*, by Iannis Xenakis (1966), is intended for a symphonic orchestra arranged in the form of the spokes of a wheel, with the conductor at the center and the audience in the remaining space between the musicians.

These are some examples of the attempts to go beyond the temporal medium in works of music, i.e. to give them a spatial dimension, in the physical sense of the term. Yet here the listener is in the midst of the movement of sound in space, which he perceives with the ear alone, not needing to involve the eye. At this point we must introduce another trend in contemporary music, namely, that toward including the visual aspect of the communication and the perception of a musical work and adding to it a spatio-temporal unfolding perceptible to the eye together with a real movement of spatial forms.

It may appear, at first sight, that this idea is far from being novel, since perception of musical compositions which is at once auditory and visual is as ancient and widespread as music itself. For centuries until the invention of the gramophone and radio—means of preserving and conveying music in time and space—the perception of a work of music required the presence of the listener in the actual field of sound waves emanating from the performer. Since this field corresponds approximately to the field of visual perception, the listener becomes, in most cases, a spectator; listening to a rhapsodist, a minstrel, a tom-tom player, a troubadour, an instrumental ensemble, or a chorus, he sees the actions, the expressions, and the general comportment of the performers.

The importance of the extra-auditory, i.e. visual, aspect of music has always been recognized, so much so that a public

concert is considered, not without reason, as a particular kind of the *art du spectacle*. We shall not go so far as John Cage when he says: "A horn player, for example, empties his instrument of the saliva contained inside, and that, frequently, captures my attention more than does the music itself." It must, however, be realized that the behavior of the musicians, especially the soloists and the conductor, is by no means a negligible factor in the experience of a concert whether by the general public or by connoisseurs. This explains, moreover, why, despite the enormous proliferation of mechanical means of musical reproduction (disc, radio, tape), the concert halls are by no means deserted.

However, in the case of a concert considered as a stage performance one is presented with music created for auditory perception, i.e. temporal, while its visual aspect, which amounts to its spatial unfolding, is but a contingent, incidental and extrinsic circumstance. The visual dimension is indispensable to neither the communication nor the perception of the musical work which takes place wholly at the level of sound, in its temporal development, and is therefore completely communicable in time and entirely perceptible to the ear.

We are witnessing, of late, phenomena in which the spatialization of music and its *spectacularisation* acquire a new dimension: not only are visual effects intended and anticipated by the composer, but they constitute the intrinsic value of the musical work in question. This trend, certain aspects of which may be traced to the eighteenth century (the *clavecin oculaire* of Louis-Bertrand Castel) has, in our day, gathered considerable momentum. The term 'instrumental theater' is being used increasingly to describe the many attempts in this direction during the last decade.

In Mauricio Kagel's composition, *Sur scène* (1960), there is a constant interdependence between the music interpreted by the instrumentalists and the actions of the three other performers: a singer, a narrator, and a mime. Incidentally, it should be noted that the text of this work relates to the problems posed by contemporary music. In *Sonant* (1960), by the same composer, the gestures, the movements, and the words—programmed in the score—are performed by the five musicians (guitar, harp, double-bass, percussion). *Originale*, by Stockhausen, is typical of this trend in another respect: there is a parallelism between the

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development of the music and the most diverse elements of the visual spectacle, the latter being subdued when the music is to dominate. A similar attempt at interrelating auditory and visual effects has been made by John Cage in *Theater Piece 1960*.

The theatrical aspect is predominant in certain compositions by Xenakis, notably in *Stratégie* (1962) which has the sub-title "a musical game for two conductors." The performance of this work assumes the character of a public competition between two orchestras, with an added element of risk (the audience decides the outcome). Polish composer Boguslaw Schäffer has written a work, entitled *TIS MW-2*, for an instrumental ensemble, a female dancer, an actor, a mime, and a soprano; his fellow countryman, Leoncjusz Ciuciura, composed *Spirale I per uno* for only one performer, a baritone, who sings and does the recitatives while manoeuvring to tend to several percussion instruments. In *Momente 1965* Stockhausen requires of his instrumentalists many kinds of *actions sonores*: hand clapping, foot stamping, finger snapping, etc., which produce part of the musical message and, at the same time, attract the attention of the "listener-spectator."

La Passion selon Sade (1965) by Sylvano Bussotti, which is called a "chamber mystery," is a complete musical *spectacle* in which the dramatic action and the vocal and instrumental performances are carried out by the same people in the same stage setting. Here, for the sake of curiosity, is an excerpt from the composer's notes for the stage direction of his *Passion*: "A FAUN suddenly appears below the percussion instruments, assuming the pose of a living caryatid. The WOMAN, attired in animal skin, falls into his arms. They contend in the playing of the percussion, using their hands, whips, and batons. The organ, harp, cello, and two pianos (one of which is, by now, at the center of the stage) respond, in turn, to the call of the PERCUSSION MASTER (the FAUN). Silence returns. A SERVANT, bearing whips, chains, and drink, crosses the stage in haste. The MUSICIANS then make their appearance. All of them are in evening dress, with the exception of the flutist who wears a seventeenth century costume. The latter enters while playing. In the event that the harpist is a woman, if she is not dressed as a man, she should wear a simple black dress with white collar. In the meantime, JULIETTE gives in to the violence; as she lies

on the piano, she embraces the harp with her bare arms, and squeezes the cello against her breast.”³

There remains the question of what, specifically, characterizes these kinds of productions. In what respect are they distinct from the other somewhat traditional forms of music and *spectacle*?

The difference between ‘pure’ music and works of what is called ‘instrumental theater’ is obvious. The author produces the latter with the combination of auditory and visual perception in mind. To divest such works of their optical dimension would be to deprive them not only of their essential elements but of their very *raison d’être*. Yet what is it that distinguishes them from the numerous theatrical forms which combine musical and visual means of expression, namely, lyric theater, ballet, and other variations of which music is an integral part?

Let us try to bring out some of the characteristics common to the widely varied productions of instrumental theater in order to distinguish it from musical theater which includes opera, operettas, ballet, and many other kinds of stage renderings of musical works. Two points seem essential. Firstly, it is the composer who determines the visual impression. The score specifies not only the music but also the words to be uttered, the noises, the gestures, and the movements to be carried out. In the extreme case the composer looks after every level of expression. Such a situation is described by Sylvano Bussotti in a discussion of his *Passion selon Sade*. He says: “The conception of this work—the theme and the music—the settings, the costumes, the design and execution of the scenery, and the musical as well as the stage direction all bear the same signature.”⁴ Secondly, in instrumental theater the division between actors and musicians is non-existent. Actions intended for visual perception are performed, at least in part, by the instrumentalists who, by virtue of this, become actors.

That which therefore characterizes instrumental theater performances, and constitutes their typical and distinctive trait, is perhaps the tendency toward an expressive unity of creation and performance or, more precisely, the search for a union of

³ Quoted from *Le Théâtre*, edited by Arrabal, Christian Bourgois Éditeur, 1968, 1, p. 92.

⁴ *Ibid.*, p. 99.

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acoustic and optical modes of expression at the creative level as well as at the performative one.

II

We shall now consider those arts whose essential objective is the organization of space. Every product of plastic art, although typically spatial, is subjected to the hold of time. This is shown in many different ways. There is, first of all, the time involved in creation, that is, a certain period, needed by the artist, within which to produce his work. There is also the apparent and actual time involved in perception, which varies appreciably according to the characteristics of the work perceived, as well as to the attitude of the perceiver and any other such internal or external circumstances. There is the time separating creation from perception, which is a factor in constant evolution and differs for each successive spectator according to the span of time separating the one who assists in the creation of the work from the one who gazes upon it. This gap, separating creation from perception, is not without importance for our evaluative judgement; it gives the work a social dimension. The question of knowing whether certain newly discovered cave drawings were done by pre-historic man or by a shepherd a century ago, or whether a Russian icon was actually painted in the 15th century or copied by a modern forger, is not of historical or commercial interest alone.

Finally there is *represented* time. The modes of expressing time and movement in the plastic arts, above all in figurative works, vary to a very considerable extent. Many a detail, in a *genre* scene as well as in a landscape or portrait, suggests the period depicted, the season, or the time of day. Anachronisms, whether intended or not, attract our attention to this aspect of pictorial or sculptural expression: a donor, surrounded by his family, watching the martyrdom of a patron saint, gothic spires adorning the gate through which Adam and Eve leave Paradise, an assemblage of saints and prelates of various period adoring the Virgin Mary, Homer holding a book with modern binding, members of the household of Mary and Martha in sixteenth century Dutch clothing, amidst furnishings of the same period, or an equestrian statue of Prince Poniatowski in a Roman tunic.

Another "temporal" aspect of figuration is seen in works

consisting of consecutive episodes representing, in a spatially homogeneous setting, different instances of a continuous action. Many *genres* and periods provide us with examples: ancient Chinese painting and *bas-reliefs* from antiquity, Indian sculpture and runic tablets, mediaeval miniatures and Renaissance tapestries, the frescoes of Giotto and the mural decorations of Puvis de Chavannes, or the panels of Memling and the canvasses of Dali. The *Passion of Christ*, by Memling (the Turin Gallery), is a particularly eloquent example. The painter shows twenty events, which range from the triumphal entry of Christ into Jerusalem to the Resurrection and the *Noli me tangere* scene, set in a rigorously structured architectural composition. These events do not follow simultaneously; each scene has its proper unique and distinct time which does not overlap that of any of the others. Note that a plastic work of successive episodes, which could be called "multi-temporal," does not imply movement. It happens that each scene is perfectly static, the temporal unfolding of the action being broken up.

On the other hand, artists are applying several methods in order to make maximum use of time as a part of movement and thus to make depicted objects dynamic. One must at first distinguish two different objectives: that of representing *objects or persons in movement* and that of representing *the movement of objects or persons*.

The first of these methods, which is tantamount to freezing objects or persons at a given moment during the time when they are changing position, is as ancient and universal as the figurative activity of man. A large part of the creative effort of the *homo artifex* was devoted to finding a means of seizing and expressing a privileged moment in the movement of a body. The picture, in a pre-historic cave, of a hunter hurling his javelin, birds on the wing painted on the wall of a Theban necropolis, the battles of Ashurbanipal depicted on Assyrian *bas-reliefs*, the discus thrower of Myron, a girl on a swing pictured on a Greek vase, Cranach's rendering of Samson overcoming the lion, *The Spinners* by Velazquez, Poussin's *Bacchanal*, Goya's *Carnival Scene*, Géricault's *Raft of the Medusa*, *The Dancers* by Degas, Sisley's *Inundation at Port-Marly*, and *The Gate of Hell* by Rodin are, to a certain extent, attempts at introducing fresh ways of representing objects or people in motion.

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There is another point to be brought out in what we have called the representation of the very movement of objects or persons. The question is no longer one of choosing and freezing a certain moment in the dynamic process, but of representing the process itself, that is, the continuous change of position in space as a function of time. This tendency of the artist to avoid the 'petrification' of motion is not so current. Although it appears in modern art more than anywhere else, its origins are fairly remote. It may be seen on a capital in the Church of Saint-Pierre at Chauvigny (twelfth century), which features a "dancer with one head and two bodies" which suggests, in a striking manner, gyratory motion.

Among the attempts of the twentieth century, let us examine two paintings by Giacomo Balla, signer of the "manifesto" of futurist painting. In his *Little Girl Running on a Balcony* he shows, through a grille, a child whose body, reproduced several times, covers the width of the canvas; one can discern nine heads and approximately twenty legs, the whole work having been done in pointillist technique. Other methods are used by the same artist in his picture entitled *Dog on Leash*. One can see the lower part of the coat, and the feet, of a woman walking her dog. Neither the woman nor the dog is repeated; rather certain parts—the woman's and the dog's feet, the dog's tail, and especially the leash—are broadly extended to represent changing position. These two paintings were completed in 1912. It was then that the famous *Nude Descending a Staircase* by Marcel Duchamp was shown at the Section d'Or. Here a method similar to that which was used by Balla in the *Little Girl Running on a Balcony* (entangled figures of a person along the steps of a staircase) gives a more continuous and unified effect.

The thesis could be put forward that whereas the above-mentioned works of Balla aim at analysis, that of Duchamp seeks a synthesis of movement, and that the former is impressionistic in his approach while the latter is more a constructivist. In modern sculpture some of the works of another signer of the futurist manifesto, Umberto Boccioni, are characteristic of this search for synthesis. The analytic and synthetic tendencies are both present in a painting by Polish artist and theorist, Leon Chwistek, entitled *Fencing* (1919, National Museum, Cracow); the legs of one swordsman and the body of the other are many

times reproduced, while each of their swords fills a triangular field.

Another figurative method consists in suggesting the virtual movement of the spectator by presuming different instances in the perception of the represented object. The plastic work shows different aspects of an object, which, in reality, cannot be perceived from one fixed point at a given moment. Works of this kind require an imaginary route to be followed by the spectator; he must engage in an integrative effort to reconstruct a certain physical or psychological state of affairs which has been expressed by the artist according to his own laws and subjective vision of the world. This method is typical of expressionism, considered not as an artistic movement of the early twentieth century but as a current which passes through the art of different periods (for example Byzantine icons, or the paintings of Bosch, Bruegel, Franz Marc, Léger, or Chagall).

This tendency is seen, perhaps in its purest state, in cubism. It comes out perfectly in the canvasses of Braque, Picasso, and countless others who continued the cubist approach. The "musical series" of Picasso, from 1912 to 1914 (*The Violin, Violin and Clarinet, Musical Instruments, Violin and Glass, Le violon au café, Man with a Guitar, Woman with a Guitar*), as well as a number of his portraits, nudes, and landscapes, can serve as perfect models in the analysis of this phenomenon.

One's first impression of these works is that of seeing somewhat unusual combinations of structural elements, and different aspects of forms shown side by side. If the art of the painter consists in decomposing objects (Guillaume Apollinaire said of Picasso that he "studies an object in the same way in which a surgeon dissects a cadaver,") and if it is true that, in order to represent three-dimensional objects, the artist decomposes volumes into planes which, by virtue of their differences in lighting, size, and dimensions, permit the spectator mentally to reconstruct these volumes and to imagine the object under consideration to be in space (Jean Metzinger), then this method entails and implies a perceptual route to be followed in the reconstruction of objects the subjective vision of which has been given by the painter. "The unique 'point of view' of realist perspective gives way to an agile vision" (André Lhote). The simultaneous presentation, in a painting, of many views of an object gives the spectator the

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opportunity of seeing it from different sides, which not only requires perceptual movement but also implies the virtual movement of the spectator.

There are pictorial works in which several ways of involving time and movement are combined. In *Héra*, by Picabia (1928), four faces of a woman are overlapped in order to show not only different views (full-face, profile) but also different moments in the perception of one and the same face. In some paintings of Picasso, such as *Three Dancers* (1925) or *Guernica* (1937), the desire to depict people in movement is combined with the cubist method of “polyvision” which demands an integrative movement on the part of the spectator.

As a conclusion to our remarks on the representation of movement in the plastic arts, we cite a celebrated passage: “To conceive of movement requires a continuously renewed effort of the mind. Signs are made in order to spare us this effort by substituting, in place of the moving continuity of things, an artificial reconstruction which amounts to the same thing in practice and which has the advantage of being easily manipulated.” These are the words of neither a cubist painter nor a futurist theoretician. They have been taken from Bergson’s *Creative Evolution*.

The methods which we have just covered—there are any number of *genres* and variations—bear witness to the extent to which the artists of all periods have been haunted by the problem of time and movement. It should be stressed that none of these attempts can break away from the vicious circle of space; they are fated to the time of *perception* and to *imaginary* movement, never achieving the real unity of space and time in the work itself.

We have witnessed, however, efforts toward overcoming this limitation, that is, to involve time in the *communication* of the plastic work and to endow it with real movement. Although one finds attempts of this kind in past periods, it is in the twentieth century that the artist, in consciously introducing real movement, has aspired to definite artistic goals. Frank Popper has competently traced the history of plastic artistic expression involving actual motion.⁵ We restrict ourselves to recalling certain basic facts.

⁵ *Naissance de l'art cinématique*, Paris, Gauthier-Villars, 1967.

The first attempts take place at about 1912-1915, and many artists could dispute their ranking in this area. First to be mentioned is Larionov who incorporated moveable elements in his pictures and even added a motor from an electric fan to a composition in order "to give natural movement to the boat." Another important work is Balla's *Portrait of the Marquise Casati*. Finally, Archipenko's *Médrano I* and *Médrano II* deserve notice; they are animated polychromatic compositions in wood, glass, and metal.

The *Realist Manifesto* of Gabo and Pevsner, published in Moscow in 1920, shows the concern for going beyond space by introducing real movement in plastic works. The following are some passages taken from it. "It is easy to understand why a simple graphic recording of several instantaneous views of motion which has been stopped cannot reproduce the motion itself.... Time and Space are the only forms on which life is based; hence, it is on these that we should base art. ... To express our view of the world in the categories of time and space is the only aim of our plastic creations. ... We regard kinetic rhythm, which is essential to our perception of real time, as a new element in art."

This manifesto was followed, within a short time, by another one entitled *The System of Dynamic-Constructive Forces* (1922) by Moholy-Nagy and Kemény. More and bolder attempts succeeded the timid ones made previous to the First World War. Tatlin's plan for a monument to the Third International (1920), Moholy-Nagy's light machine (*Licht-requisit*) (1930), Calder's mobiles (from 1932), and certain kinds of Pop Art mark stages in the development of this trend. One may consult the mentioned book by Frank Popper, which gives an account of the growth of kinetic art to the present.

Before mention is made of more recent and impressive attempts to put physical movement to full use in works of plastic art, it should be pointed out that, without having realized it, we have just crossed a decisive threshold. As soon as they are provided with real movement, two or three dimensional plastic works become a kind of the *art du spectacle*. If one is reluctant to attribute this character to kinetic forms of art as rudimentary as those with which we have dealt until now, he has only to consider the flourishing of this movement after the fifties in order to convince himself of this evident feature.

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The Cosmorama of Sandu Darié serves as a good example. In a two and one half by four meter booth the whirling motions of "transformable structures" synchronized with the play of lights give a variety of visual illusions, including changes from two to three dimensions and vice-versa. The exhibitions "Kunst Licht Kunst" at Eindhoven, in 1966, and "Lumière et Mouvement" in Paris, in 1967, provided occasions to present a wide variety of forms of kinetic art, some of which merit being considered spectacles. The works of Nicolas Schöffer, particularly his "spatio-dynamic" structures, are attempts at bringing kinetic art outdoors, combining it with architecture, and integrating it with the city; his towers, provided with mechanical, electro-mechanical, or electric motion (for example the Cybernetic Tower at Liège with the gigantic "Formes et Lumières" spectacle lasting for twenty minutes), as well as the steel structure installed in front of the Musée d'Art Moderne in Paris in 1969, which revolves slowly while reflecting multicolored lights from fifteen projectors programmed to function according to the traffic circulation, come to mind. Here is plastic dynamism being put to the test of the street.

III

Let us attempt to draw some general conclusions that apply to musical as well as plastic works which go beyond their temporal and spatial milieux respectively. Both acquire a new value, that of movement. By this is meant, as we have already been pointed out, motion in the physical sense, that is, real motion which is perceptible to the eye of the spectator and the spectator-listener. It is, then, motion as a spatio-temporal phenomenon and as "change of position in space as a function of time with regard to a frame of reference" which constitutes a common characteristic of the artistic productions in question. As soon as there is motion which is real and perceptible to the eye, the function of space in musical works changes as significantly as does that of time in plastic works. Where what is temporal is 'spatialized' or what is spatial is 'temporalized' duration and extension appear as interdependent aspects.

The subjugation of space by music as well as the conquest of time by the plastic arts entail other consequences, namely, the

spectacularisation of musical and plastic phenomena, which we have just discussed. Note that motion plays a determinative role in this transformation. If one accepts the above-mentioned formula that artistic productions necessarily communicated in both time and space constitute the domain of the *spectacle* then any musical work in which auditory effects are combined with mobile visual techniques or plastic composition incorporating actual motion, the communication of which takes place over a given period, belongs to the *art du spectacle*. Surely they do not automatically leave their respective domains of music or the plastic arts; yet in any schematic rendering there must be set aside for them an intermediate area where music (or the plastic arts) and the domain of the *art du spectacle* partially overlap. But it is beyond any doubt that the many varied artistic productions which escape their proper milieux in achieving a spatio-temporal depth appear as something more than either musical or plastic works, and thus the notion of *spectacle* seems to be the only one capable of characterizing them adequately.

Moreover some spatio-temporal works combine musical and plastic modes of expression in such a way that it would be inappropriate to place them in either artistic category. The *Poème électronique*, an audio-visual presentation at the Brussels exhibition in 1958, was the work of three individuals: a composer (Varèse), a composer-architect (Xenakis), and an architect (Le Corbusier). In a specially erected building four hundred twenty five speakers were arranged according to trajectories which were determined in advance, and the resulting sound was accompanied by projections. In *Canzona 5*, by Dieter Schönbach (1969), for soprano, six projectors, and "environment," which he calls *Multimediastück*, the sound expression (singer and tape with several sound tracks) and the visual forms are so interrelated that the projection equipment can be used only by musicians.

In short, musical productions which have conquered space as well as plastic constructions which have conquered time are of the same kind as such phenomena as public festivals, carnival parades, travelling shows, *son et lumière*, and *laterna magica*. The aspiration of the artist is changed into a desire to "spectacularize" his works in response to the perpetual need of the public to consume products of artistic creativity that are filled

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with action or in motion, that is to say, involving both a spatial and a temporal unfolding.

There remains to be made a further remark regarding “spectacularized” works of music or the plastic arts. Every musical work, we have seen, may be communicated not only in time but also in its spatial unfolding (e.g. a symphonic concert) in the same respect that every product of plastic art can be communicated in both space and time (for example a theatrical scene presented to the spectator during a fixed interval and yet in movement). The character of spatio-temporal works, which we have just analyzed, requires that we add an additional criterion to that of necessary communication in both time and space, namely, “intention” at the stage of creation. We mean musical or plastic works which have been created with the intention of being communicated in a spatio-temporal unfolding.

The criterion of the intent of the creator makes it easier to distinguish between ‘theatrisations’ of music, on the one hand, and authentic spatio-temporal works, on the other, and between plastic art which is communicated within a specific temporal framework and that which is *a priori* spatio-temporal. The performance of *Pierrot lunaire* by a contemporary ensemble adds certain visual effects (costumes, masks, lighting) but this has not prevented Schönberg’s work from continuing on its course, for more than half a century, as a form of “pure” music. On the other hand, the exclusively auditory presentation of a composition by Kagel, Stockhausen, or Bussotti cannot give one any idea of the work. An analogous difference is to be seen between a Venus of Milo placed on a rotating platform and a kinetic construction by Nicolas Schöffer. The former has motion as an occasional circumstance or a secondary factor whereas the latter would be quite incomplete without movement.

A common trait of musical and plastic works which go beyond the temporal or spatial milieu is their “sociality:” these works could neither be communicated nor be perceived but at a time and place set in advance; this entails a kind of social contract between the creator (the performer) and his public. This quality which distinguishes them from a host of musical or plastic productions is common to all *genres* of the *art du spectacle*. The fact that the musical or plastic works in question are created

for the purpose of being carried out in the form of a *spectacle* has other social implications. For the most part the author personally takes part in the execution of his work; he composes or constructs it as a technician aware of all the means of expression which need to be used and forms it with an eye to immediate execution and more or less instantaneous consumption.

Finally there arises the question of how, of late, such an impetus to spatio-temporal experiments in music and the plastic arts has come about. Are they a reaction against the invasion of our lives by mechanically conveyed music and industrially mass-reproduced plastic works? Are they stimulated by taste or rather by the "habit of the *spectacle*" which has been developed to enormous proportions by television? Are they analogous to the phenomena of the "setting in motion" of literary works by the theater, the cinema, or television, which amount to flood of adaptations?

It is not easy to give a clear-cut and final answer to questions concerning phenomena *in statu nascendi*. What is evident, however, is that these attempts to go beyond the temporal milieu in works of music and the spatial medium in plastic constructions correspond to the tendency of the art of any period to overstep pre-establish limits and to renew itself, as well as to the desire, with which man has been afflicted, to go beyond himself. As do all experiments, these falter occasionally; they have met more often with failure than with success; they have our aesthetic habits against them. Yet it must be recognized that, despite appearances, they are not directed to a scholarly elite but to a wide public, and they reflect certain aspirations and anxieties of our time. Artistic productions in which real movement is used to the fullest extent tend to hold to the maximum the attention of the spectator or the spectator-listener, to capture him entirely, to absorb him to the greatest degree, and to make him a participant. They may even provide him with a *catharsis*.

This capacity is not to be disregarded in the hyperdynamic society of the "second twentieth century." It could prove particularly valuable with the prospect of a leisure civilization which, in certain developed countries, is becoming an increasingly tangible reality. The systematic reduction of working time is leading inevitably toward the point of forty-thousand hours of work per human life, calculated by Jean Fourastié. At that point

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the question which Georges Friedmann has posed with anxiety, namely: "What will come of the lives of the mass of men and women for whom the center of gravity of life will lie no longer in work but outside it?," could prove to be the number-one social problem. In order that the civilization of leisure become one of leisure activities and not one of idleness, man must be helped and, to a certain extent, guided. Above all he must be offered a wide choice of ways in which he can spend his free time and a selection of alternatives corresponding to different inclinations and all temperaments and able to capture his attention and to form his tastes and habits. This entails enormous tasks and responsibilities.

The *art du spectacle*, with its extremely varied forms in constant evolution, which include those discussed in the preceding pages, is called upon to relieve, better than can the other domains of artistic activity, "the wearisome charge of having nothing to do" (Boileau).