

Voisé, Waldemar

Time in Science, Literature and Art - a Soviet View and Some Other Problems

Organon 12 13, 51-60

1976 1977

Artykuł umieszczony jest w kolekcji cyfrowej Bazhum, gromadzącej zawartość polskich czasopism humanistycznych i społecznych tworzonej przez Muzeum Historii Polski w ramach prac podejmowanych na rzecz zapewnienia otwartego, powszechnego i trwałego dostępu do polskiego dorobku naukowego i kulturalnego.

Artykuł został zdigitalizowany i opracowany do udostępnienia w internecie ze środków specjalnych MNiSW dzięki Wydziałowi Historycznemu Uniwersytetu Warszawskiego.

Tekst jest udostępniony do wykorzystania w ramach dozwolonego użytku.



Waldemar Voisé (Poland)

TIME IN SCIENCE, LITERATURE AND ART — A SOVIET VIEW
AND SOME OTHER PROBLEMS

I. BACKGROUND

Often it is difficult to know why one branch of science developed earlier than another, or why it has assumed a particular structure. It is, however, sometimes possible to throw some light upon the conditions that favor the appearance of new disciplines. The simplest case is that of distinguishing a set of problems already ripe for study from a larger set. Sometimes certain developments in our domain of knowledge demand advanced theoretical studies which depend for their formulation on a new and separate branch of science. Again some other times it may appear reasonable to treat as whole the various problems connected with research on a determined fragment of reality.

It seems to have been this last mentioned set of circumstances which created a new discipline known as the study of time or "chronosophy". The institutionalization of chronosophy is now well advanced, judging from the intensity of the intellectual bonds linking "chronosophers" in all parts of the world.

Interest concerning time is by no means a new phenomenon; problems connected with time have stirred human minds for ages. Our meditations on life and death, on duration and change, force us to reflect on time: these are the source of those reflections which ancient and present chronosophers have scattered on the pages of many books devoted to religion, to philosophy, literature, mythology, etc.

During the last decade, the temporal structure of the world and the temporal character of human activity became subjects of continually growing scrutiny. At a 1966 symposium of the New York Academy of Sciences, J. T. Fraser began his considerations on interdisciplinary perspectives of time with the following words:

"The vast array of opinions regarding the nature and meaning of time as recorded in the literature demonstrate beyond doubt that interest in the problems of time exists in the history of humanistic thought and in the history of science; we may observe in both an intense preoccupation with the temporal aspects of reality. The abundance of views may be attributed to certain general causes; the idea of time is a constituent of all human knowledge, experience and mode of expression; time is an entity that seems to be connected with the functions of the mind; it is a fundamental feature of the physical universe"¹.

Subsequent steps in the quasi-institutionalized consolidation of this young discipline included the publication of *The Voices of Time*² and *The Study of Time*, v. 1³. The reading of Part One of the later volume demonstrates how physicists are inclined to reify the idea of time, against the background of the modern conception of relativized time-and-space. There appears simultaneously another tendency, giving this concept an operational character, bound with reflections on such mutually interdependent problems as the beginning and the end of phenomena, finiteness and infinity, continuity and discontinuity of time.

The representatives of biological sciences (Part Three) have concentrated their attention on phenomena connected with physiological, biological, psychological and social experiences of life. Cyclic biological changes have been known through history, yet have hitherto been treated as a generally accepted manifestation of life and society and only lately have become the objects of scientific analysis.

The fourth part of the book is devoted to "Time and Culture", and such varied related questions as the definition of time, the Darwinian revolution in the concept of time, attitudes to time in underdeveloped environments and time is the consciousness of modern man, with particular reference to some of the thinkers (Descartes, Rousseau, Hegel, Beckett) and other dramatists.

In his introductory lecture G. J. Whitrow, raised the problem of the linear concept of time understood on the ground both of natural sciences and the study on man and society.

The volume closes with a summary given by J. T. Fraser, Founder and Secretary of the Society and spiritus movens of contemporary

¹ *The Interdisciplinary Study of Time*, "Annals of the New York Academy of Sciences", Vol. 138, Art. 2, pp. 822—847, 1967; conference, January 1966, reprinted in "Archives Internationales d'Histoire des Sciences", XIX année, No. 76, 1966.

² *The Voice of Time — A Cooperative Survey of Man's Views of Time as Expressed by the Sciences and Humanities*, Ed. J. T. Fraser, XXV — New York 1966, p. 711. See the detailed review in "Isis", 58.1, pp. 191; 1.

³ *The Study of Time. V. 1. Proceedings of the First Conference of the Study of Time*, Ed. J. T. Fraser, F. C. Haber and G. H. Müller, Berlin—Heidelberg—New York; Springer Verlag 1972, p. 550.

chronosophy (the name is also of his invention). He gives a review of the many problems, draws some conclusion on the subject, and delineates further trends. The most important of these derives from the dual relation of man to time. On the one hand, man desires to eliminate its passing from his individual and collective consciousness, on the other hand he considers time as fundamental to all phenomena. Against this background Fraser stresses a fundamental feature of chronosophy: it may not be limited to the study of those processes which can be mathematized. He declares himself for what he calls a "free rationalism", which, while keeping to rules of accuracy and of thinking according to logic and mathematical categories, considers as well the emotional and value judging aspects of the human experience.

The second conference of the International Society for the Study of Time took place in 1973 at Lake Yamanaka, Japan⁴. This time the main attention of the participants centred on philosophy, psychology, and the relationship between world-views and methods of time measurement. It is significant that discussion, often very passionate, and always conducted in the presence of all participants, seldom revealed the traditional antagonism between the representatives of so-called "sciences" and "humanities", being laid on all which unites rather than on that which divides them.

II. RUSSIAN CONTRIBUTIONS

It is both remarkable and fortunate that a similar interdisciplinary and conciliatory attitude is evident through a recent Russian publication: *Ritm, Prostranstvo i Vremiya v literature i iskusstvie* (Rhythm, space and time in literature and art), Leningrad (Ed. Nauka) 1974 (300 pages). The editorial board of this volume and its authors were well aware of the current importance of the subject, as well as of the difficulties connected with it. Their immediate interest arises from the modern preoccupation with the passing time: our growing need to look for the "time reserves" in the life of modern man, and overgrowing concern with the technical, social and cultural demands on time. The difficulties involved in the preparation of the book derive primarily from its aim to achieve as synthetic as possible a solution of problems which are, because of their interdisciplinary character, very complicated. It should be remembered that the problem of cooperation between art

⁴ *The Study of Time. V. 2. Proceedings of the Second Conference of the Study of Time.* Ed. J. T. Fraser and W. Lawrance. Berlin—Heidelberg—New York, Springer Verlag 1975, IX — p. 486. For an early report — see "Scientia", July—August 1973.

and science has been of passionate interests to artists and theoreticians of art, as well as to scientists⁵.

In contrast with traditionalists, who say that rhythm, space, and time, being separate categories, do not respond to complex treatment, B. S. Maylakh, in his introductory editorial paper, states that the purpose of this book is to correlate these three categories and not to separate them. Continuing the research concerning artistic creation which began in 1963 in Leningrad, a group of authors working in the Soviet Academy of Sciences (Leningrad branch) prepared three sets of questions for this book. The first concerns general problems of rhythm, space and time; the second — their relations in literature, theater, architecture, music and cinematography; the third concerns mathematics and natural aspects of the problem mentioned in this volume.

Each of the twenty-one theses which compose the book may act as a starting point for generalized ideas, with the condition that the reader has a certain amount of learning within certain disciplines. This condition, to a far lesser degree also concerns the work described in Part I of the book under review, because the problems mentioned there are made up of general-philosophical and methodological ideas enlarged upon by the authors, with the aid of texts better known and, therefore, more accessible.

The basic thesis of one of the papers contained in *Rhythm, Space and Time in Literature and Art* refers to a very essential and most interesting matter — the conjunction between art and science. The author writes that in spite of their diversity both art and science of the 20th century consider in a similar way not only the problem of the time, but also a number of other problems related to the gradual evolutionary substitution of the biosphere by the noosphere (meaning the sphere of reason). It becomes clear that some of historiosophical trends of our age refers distinctly to mythological traditions of antiquity, particularly when it proclaims a cyclic conception of history. Similarly, Reichenbach's view in interdependence of time and memory⁶ shows relation to ancient mythology, where Mnemozyne was goddess of time as well as of memory⁷.

Another author wondering about the classification of the arts as

⁵ This is clearly indicated in the monograph published by G. Kepes, *The Visual Arts and the Sciences* [in:] *Science and Culture*, Ed. by G. Holton, Cambridge 1965 and confirmed by the fact that the journal "Impact" devoted the first number of 1974 to the collaboration of art and science. On the particular problem: J. F. Spratt, *Science and Music* published [in:] *Main Current in Modern Thought*, vol. 30, 1973.

⁶ H. Reichenbach, *The Direction of Time*, Berkeley 1956.

⁷ J. P. Vernant, *Les origines de la pensée Grecque*, Presses Universitaires de France, Paris, 1962.

temporal, spatial or temporal-spatial, makes a distinction among manners of lasting of work of art: the ways in which they reflect time and space, and the ways in which they are perceived. He concludes that there exists "a connection between temporal and spatial parameters of art and the role of various psychic mechanisms in its perception" (p. 38). This is implied by the fact that kind of art determines what could be called an "epistemological" attitude of the perceptrs.

Such considerations must necessarily lead to a methodological pluralism. This combines a structural method with the analysis of perceptual and conceptual elements of time and space, in spite of the difficulties and limitations of the complex (subjective/objective) character of scientific cognition. That sort of method may indeed prove particularly useful, as it "allows to connect a high degree of generality in research with finding the exact mechanism of such or other processes" (p. 25).

A concrete example of the complementary ability of methodological postulates and sound research, is provided by two papers concerning rhythm. While the author of one of them notes the lack of mature investigations on this, probably the oldest element of aesthetics, the author of the second considers the traditional conception on rhythm as "the formal base of composition". This allows him to draw the conclusion that the most essential role of rhythm consists in the specific way of organizing the temporal-spatial continuum of diverse works.

The second longest part of the book concerns various fields of artistic creation and deliberations on rhythm in poetry, prose and music. Four papers have been devoted to the problem of time in literature and film; and other four concern the meaning of temporal-spatial elements in novels, scenography, architecture and music.

The last part of the book contains three interdisciplinary studies from the borderland of art with mathematics and natural sciences. It speaks first about spatial and temporal transformations in art, main on the background of the relation of "real" (i.e. physical) time to "literary", "painters" and "musical" time (among others on the background of M. C. Escher's graphic work) and also on symmetry in ornamental art. The last study raises the problem of the biochemical and biophysical roots of artistic creation and perception. With example from music and poetry the author analyses the relation of rhythmical (i.e. temporal) components. The creator, he writes, is not always fully conscious of that connection though he always endeavours to "reflect the temporal structure of his own emotional processes, which are the basic informative and associative components of the work he is creating" (p. 297).

Proportions between categories listed in the title of the book have

been almost ideally kept. Six papers concern rhythm, six speak of time and the last six of space-and-time. Only one paper is devoted to space alone, since in all works of art space is nearly always linked with time, and moreover, space as a relatively independent element, has yet reached epistemological emancipation, although E. T. Hall and A. Gosztonyi have recently cleared new ways to the study of space ⁸.

III. A COMPARATIVE OVERVIEW

Almost all authors of the Russian book drew their material from Russian, Soviet, European and American writers, both classical and contemporary. For this reason it is both surprising and unfortunate that no mention is made, or awareness displayed of the chronosophical works mentioned in Part I of their review. Familiarity with *The Voice of Time* and at least with volume I of *The Study of Time* would have made the authors' labor more encompassing, hence more valuable. We may add some French publications. The colloquium of 1964, held in Cerisy-La-Salle, and the "Week of Synthesis" organized in Paris — in the famous drawing room of M^{me} de Lambert — in 1969 by the Centre International de Synthèse were both very interesting. The outcome of the first is the book *Entretien sur le Temps* containing the reflexions of over 30 participants ⁹, and the results of the second — several volumes under the title *Espace et temps selon les peuples et les philosophes* ¹⁰.

Independent of the way in which the authors of particular papers will make future use of these I wish to formulate here two problems which I regard important. One concerns rhythm, the other one the idea of reflection, bound loosely to chronosophy and connected with the totality of our knowledge of art.

Significant works on the subject of kinetic in music ¹¹ show convincingly that the conception of rhythm is sometimes not clear. It is not a question of R. Ingarden's differentiating concrete time in musician's work, and of the quasi-temporal character of the work itself ¹², although this could indeed be interesting in research on rhythm. Nor it is a question of diversity of definitions. The important thing is that "rhythm" very often fails to determine exclusively rhythmical phenomena, being

⁸ E. T. Hall, *The Hidden Dimension*, II ed. (Doubleday) 1969 and A. Gosztonyi, *Der Raum. Geschichte seiner Probleme in Philosophie und Wissenschaften*, 1975.

⁹ Ed. by J. Hersch and R. Poirier, Paris—La Haye 1967.

¹⁰ "Revue de Synthèse", N^{rs} 55—60, 1970.

¹¹ E. Kurth, *Grundlagen des linearen Kontrapunkts* (1916) and *Musikpsychologie* (1930) and recently S. Szuman, *Ruch w utworach muzycznych* (Movement in Music), PWM, Kraków 1951.

¹² R. Ingarden, *Time and Modes of Being*, American Lectures of Philosophy, C. C. Thomas, 1964 (First ed. 1938 in Polish).

rather the expression of what is connected with the latter, therefore the total of kinetic problems. It is, consequently, better to use the concept of motion, which includes also rhythm, all the more so since music is certainly connected with expressiveness of motion, bound with its ability to transfer musical and extra-musical matter. And although music is able to express only vague feelings (such as joy in general, sorrow in its usual frame), this will prove sufficient to the close investigation of music kinetic.

It seems that the starting point should here be the musical meter conceived as a phase of measured motion in time. Neither the good performer, nor the appreciative listener will be subjected to the fetish of the bar separating beats that follow a certain sequence, but will rather let themselves be influenced by metric units identical with the beat (most often a cadence contains several such units). This prompts the postulate of differentiating mobility from tempo in music, the former depends on the number of sounds, the latter of the number of metric units falling to a determined section of time. That is why a composition containing many semi-quavers seems to be faster than one containing a lesser number; while in both cases the course of sounds is identical, the first composition is more mobile than the second. Moreover the kinetic formula of many musical compositions founded upon extra-musical elements (rain drops, the clatter of horses' hoo, birds' song) often leads to a confusion of horizons: having to deal only with a metaphoric comparison, we are always inclined to identify it with the intended conception of the composition. Such a differentiation would probably be useful in an attempt to interpret phenomena connected with rhythm and the analysis of different varieties of time in works that are not only musical compositions.

Investigations from the borderland of art and physical science may be most important and arouse passionate interest. This is also suggested by the last part of *Rhythm, Space and Time...*; and also by the consensus of a recent conference of Polish chronosophers (October, 1976) devoted to the idea of time in the history of physics and art. The confrontation of "two languages" used by the representatives of these fields of knowledge proved fruitful; there were, moreover, references to the book of physicist Zawirski and the phenomenologist Ingarden¹³.

These events confirm the accuracy of a view, expressed by David Park, third President of the International Society for the Study of Time at the Second conference of that Society: "I wish to show that the science of physics can supply definitions, concepts and facts, that are

¹³ Z. Zawirski, *L'Evolution de la notion du Temps*, Cracovie 1936 (summary in Polish Cracow 1935). R. Ingarden — see ref. 12.

relevant and useful in discussion of temporality going beyond the normal subject matter of physics" ¹⁴.

IV. FUTURE OF INTEGRATED STUDIES OF TIME

We know that reflections on life and death, duration and change, induced people of most remote ages to deliberations on time. Our century, however, witnesses the birth of new problems, specific for the current times. With the widening of the universe that surrounds us, the present is seen to shrink and our attention is drawn to the future.

This opinion leads us into the heart of the problem as argued by George Picht ¹⁵. He reasons the conviction that the origins of evil, especially concerning our epoch, are rooted in its vision of time. He ascertains that our generation typically conceives time as a permanent present, i.e. an eternal sequence of fugitive "now" (immediacy), so that we cease to feel essential difference between the past, contemporaneity and future. Further he argues that this Parmenidean vision arrives from the sources of contemporary science and technology. The "verity" of science, resting as it does on the petrification of the present, is shattered only by death, which is an escape from the land of time to the land of non-being; it is the only authentic experiment which demonstrates the intransgressible distinctness of past — present — and future, and leads us beyond the scientific horizon of thinking.

This is certainly an original attitude, were it only owing to its contrast with the views of the majority of thinkers, who insist on the prevalence of the future as a starting point of our style of thinking and acting — it is enough to mention here Margaret Mead and Alvin Toffler ¹⁶. Both indicate the evil effects of the apparently unlimited possibilities of man's adapting himself to the requirements of the future.

George Picht is, however, right to load us (who are so often inclined to hide behind the impersonal screen of "the present") with the burden of responsibility, since we so frequently forget that we are indeed well anchored in "what is", but have nevertheless been shaped by what "has been", and what "is to be". Without engaging in the polemics between "presentism" and „futurism", it can be stated that the situation is about ripe for replacing two- or even one-dimensional concepts (since the future is steadily devouring the present) by a three-dimensional criterion

¹⁴ D. Park, *The Study of Time*, vol. 2, p. 258.

¹⁵ *Theorie und Meditation*, "Merkur", No. 311, 1974.

¹⁶ Before Alvin Toffler's book *Future Shock* (1970) it is enough to mention Margaret Mead's essay *The Future as the Basis for Establishing a Shared Culture*, published in "Science and Culture", ed. by G. Holton (see ref. 5).

of our thinking and acting, in which the time of people still living would be determined by generations that are already deceased, and also by those that are to be born. It would perhaps be right to risk the statement, that the continual oscillation between those three categories of time (past — present — future) leads to a fascination with chronosophic problems. It is also easy to detect in Golo Mann's polemic with Margaret Mead¹⁷. He is ready to admit her being right in two matters, that particularly interest us: the continuity between past, present and future, and the utility of prophecies averting predicted disasters. A chronosopher might probably be of help to Cassandra, when certifying that the above mentioned three-dimensionality of experiencing time, could be able harmonize the contemporary man's psyche and restore its shaken balance which I am inclined to call "natural", were it not risking a misunderstanding connected with that notion, too often masking individual convictions.

Very misguided and harmful is indeed the negation of the past, as Arnold Toynbee professed with passion and for many years. The technocratic style of thinking induces us to prefer either the present or the future, as the most perfect discovery of today is often out-of-date tomorrow, which compels continual improvement. In order, however, to understand the character of the anti-scientific trend. (note that the word "science" is more and more frequently placed in quotation marks) it should be said that it is not against science in general, but against the recent direction of the scientific interest almost exclusively towards the technical and utilitarian results. The new trend in scientific research places biology in the very center of modern interest. The ecological question is not only that of analysing relations between organism and the surrounding environment, but a biologic perspective of the entire evolution of science; so, the important role will be given to chronosophy. For in the light of our former reflections, rejecting the past or conforming ourselves to the future, are as wrong as an apotheosis of the present. A single man be exposed to the danger of falling into all sorts of neuroses or mental alienations, living only in his past or exclusively in the future or finally keeping entirely within the compass of his present existence, but what may be the consequence of such deformations many times multiplied? — When considering these matters we may not realize that we are beginning to think in the categories of chronosophy; we may, however, find comfort in remembering Molière's Monsieur Jourdain who for a long time, was unaware of having been

¹⁷ G. Mann, *Last Thoughts on the "Generation Gap" — Dr. Mead's Mistake*, published in "Encounter", vol. XLIII, 1974.

speaking in prose. An organic vision of science offers chronosophy every chance of cooperating in establishing the right hierarchy of values. This will by no means be little in the judgements of future generations.

*

“To expostulate....

Why majesty should be, what duty is,
Why day is day, night — night and time is time
were nothing but to waste night, day and time”.

Different variants of Shakespeare’s question: “why time is time” have intrigued a number of thinkers who did not heed the warning of Polonius (like many statesmen, he was fond of asking rhetorical questions). However, the time we have lost by trying to expostulate about time is seldom wasted, notwithstanding even if it reveals but the deficiency of our mind. There is no reason to despair. Let us find comfort in the fact that it is awareness of ignorance that shows the way to knowledge.