

Calculation and Imagination in Electronic Music

delivered at the State University of New York at Buffalo, on February 28, 1967, by

Henri Pousseur

Serial electronic music in Europe began as a result of two seemingly contradictory intentions. One of the most pressing reasons we had fifteen years ago for searching after new acoustical means was the need to enrich the resources of sounds at our disposal — and not in general but precisely in the direction of those complex sound qualities that for a long time were contemptuously grouped under the category of "noise". We had already heard some examples of these sounds in the music of the early part of this century, for example in the Rite of Spring and in Schoenberg's Five Pieces for Orchestra, in some pieces of Webern — like the Bagatelles for String Quartet and in a very different way the later Variations for Orchestra, and in much music of Edgard Varèse. However, there were also other strong influences contributing to this new special sensibility: the kind of sound the contemporary world makes (traffic, factories, and so on), and also the kind of general experience it creates without looking principally to its sounding aspects; this experience is basically one of movement, of speed, of complexity. And finally, there was the growing asymmetry in other artistic fields, and even in other levels of musical composition, which were awakening in us the desire for a new, fresh, and aggressive sound material.

However, at the same time we were possessed by an implacable desire for strict organization, for rigorous and clear control of what we were doing. This was the time of so-called "total organization" in its first, very rigid version; we had undertaken to apply, on all possible levels and in every perceptible dimension, methods of guiding and combining the musical elements which we had deduced from the Schoenbergian and above all from the Webernian serial system, stressing almost exclusively the rational, quantitative, and metrical aspects.

The two intentions, which probably developed themselves on different levels of our consciousness, the one more imaginative and the other more rational, were not, however, completely independent of each other. For example, experience with so-called "musique concrète" (an experiment that Boulez was making as I first met him in 1951) had taught us almost ad absurdum that such complex materials as those recorded sounds and noises needed a particular care in manipulation and in putting together, a very strong and, above all, well adapted structure to become musically significant. So we thought it would be better to take the question from its most simple side, to study at first the elementary properties of sound material, to reduce it to essentials, and to try to rebuild from that point all the other things, all the complex phenomena we knew to be lacking. That was the beginning of electronic music in its narrow sense, and of its at first extremely pointed opposition to such practices as "musique concrète".

Karlheinz Stockhausen was the first to have the chance to try to realize this idea, and I think this was appropriate, since he had the strongest, the most radical, and probably the clearest conception of what there was to do. When he was invited to work at the Cologne radio studio in the summer of 1953, he decided to use only pure sine tones. Such waves have the simplest,

the most continuous form imaginable. They are completely free from secondary asperities which give rise to overtones. There is an acoustical theorem based on fundamental mathematical laws, that every sequence of vibration (including those which are perceived as sound), no matter how complex, can be reduced to an assemblage of sine waves, each of which has its own frequency and amplitude, so that these two parameters have to be measured and the whole phenomenon can be described in a two-dimensional system of coordinates. If the sound to be analyzed is regular, that is, if it is periodic, it can be described by a set of harmonics, also known as a Fourier series. If not, that is, if it is a complex and non-periodic noise, one has to use the integral function developed by the same mathematician.

Stockhausen felt that what could be done in one direction could also be done in the other. If the analytic way is correct, the synthetic way must also be possible. If one could consider a complex sound, a complex wave, as the sum of a number of simple components, then one could also produce such a complex sound, with absolute precision of control, by putting together, by mixing these different components. And so, using only sine waves, and through their assemblage, one would be able to rebuild, or to build originally, any imaginable sound event.

In this way Stockhausen composed Studie I. Studie II was made by a similar method but already with certain liberties. I had the opportunity to follow his work very closely and, in 1954, to make a little composition of my own at the Cologne studio, called Seismogrammes. In these first attempts, we were still very far from the desired goal. Instead of a situation in which the sine tones came together to form more complex sounds, they remained basically discrete and identifiable; we had a situation in which the sine wave material was used like an easily recognizable instrument. Sometimes (with a decrease in volume) like a very sweet, attackless vibraharp, sometimes (with more sustained sounds) like the softest tones of a pipe organ.

Departing from an analytic hypothesis, the result remained very analytic, and each component could be heard by itself. Of course, there was a possibility, in later works of the same kind, of reaching a higher level of fusion and integration of the elements (for example, already somewhat in Stockhausen's Studie II). This higher level of fusion could be obtained if one used a great number of components for each resulting sound, or if the components had a very special relation of frequency, either a harmonic one, so that most components were absorbed by a few that served as fundamentals, or a more noise-like, quantitatively complicated one, in which the different partials destroyed each other's identity by being out of phase and fusing together in a new, rough opacity, no longer separable by the ear. But these processes showed various handicaps. A great number of generating operations were required to produce a single sound, so the noise level went way up. That diminished the quality of the results, which remained far from what had been planned. Furthermore, it was not really possible to control all the detailed aspects of the juxtaposition of components, since Fourier's analyses of harmonic series do not exhaustively show the internal structure of a complex wave. For example, the relation of phases between the components is of capital importance in the degree and type of their interaction. It was impossible to control this because the instruments we used did not allow precise phase control. In fact, this method, which was believed to supply an airtight description and control of the microstructure of sound, was afflicted by a fundamental contradiction: something that must basically be considered an autonomous, irreducible unity — for instance, a note of the trumpet or the sound of a struck piece of metal — was transformed into a group of discrete, abstract components.

This lesson could be heard in a very concrete way. Working with electronic means, one can verify that there were much faster ways than using sine waves to realize the intended sounds.

There are other types of waveforms, upon which one may use such means of transformation as filters and modulators to get results which take an exceedingly long time to be produced, in a less satisfying way, by the assemblage of sine tones. But, to be able to use these other sources, it was necessary to renounce, to a certain extent, the primary postulate of reducibility of all sound events to a unique, homogeneous, and isometric basic material. It was necessary to accept, at least provisionally, a certain plurality of origin, even of the electronic waveforms.

That was the next step. In his first great electronic work (which is, I believe, the first great electronic work by anyone), Gesang der Jünglinge, Stockhausen used different sources. Among them, of course, were sine waves, but no longer exclusively. There were also square waves, impulses, and variously filtered white noise. And there was finally, as the most unexpected element for those who knew Stockhausen's radicalism at that time, the voice of a little boy singing the text of the "song of the three Hebrew youths in the fiery furnace", from the Book of Daniel. Stockhausen tried to control the mixing of this much stretched sound palette by finding all possible points of contact between the different elements, by producing a great number and variety of intermediary types. He succeeded indeed in composing an admirably unified and, however, much more diversified piece than those previous. But this resulted probably just from the fact that he sacrificed a purely hypothetical postulate and accepted a certain degree of indeterminacy in controlling the material. He accepted this indeterminacy not only in the lowest level of sound events; where the vibration is no longer perceptible in all its details but becomes integrated by the ear in a purely qualitative manner; but also by generalizing this change of mind and giving up the control of some perceptible, macroscopical facts of structure, except in a total statistically integrated way.

From that point, a new branch of evolution began to develop, above all, I think, in the newly established studio of Milan (under the direction of Luciano Berio), a branch in which the intuitive apprehension of the available materials was chiefly stressed, and where the aleatoric factors grew very quickly. That was the time when a certain degree of indeterminacy and of chance was also included in instrumental music; it was the first search for so-called "open" or "variable" forms. Here I must certainly mention the influence of John Cage, whose use of chance elements in musical composition had an unquestionable importance in giving the impulse to this new possibility. However, except for the very important difference of attitude between him and the European composers of my generation regarding the questions of form, use of randomness, control of the results, and so on, I believe that the European experimental music of this time contained the germs of this new evolution and would (even if more slowly and with more difficulty) almost certainly have found this way for itself. The experience with electronic means, as I just showed, should have had — and indeed did have — an important part in this growing consciousness. And it was also to have an important part in further proceedings.

In 1957, I had the occasion to work two months at the studio in Milan and there composed my second electronic work. I was searching, on one hand, for the most asymmetric sound material possible, which would show on its own low level (of small wave unities) the same properties of unpredictability as my colleagues and I had put on the higher level of our former compositions (the level of perceptible structures); and on the other hand, I was looking for the application of the new, movable patterns of form in the field of electronic music. It was rather probable that I would have to connect those two researches (which on different levels showed a certain similarity) in using rather aleatoric methods of producing and guiding both the sound material and its combining structures. So I started with only one source, white noise, and through different methods of selecting various stratifications out of this basic "magma" (methods which were too long to describe here in detail, but of which I can principally say that they always contained

a certain degree of unpredictability), I produced a material which had the noisy, irregular character I had wished, but which I could also control in an effective way. It was a total way of control, not of each single element, but of whole groups of elements. I could totally determine the motion of pitch and the variation of statistical speed of the impulse-like, short elements that I had extracted from the white noise. I could also control the transformation of these short, pointillistic elements and groups of elements into continuous, gray, and moving surfaces, and their more or less precise interruption of silences of varying lengths and of varying numbers. I did not compose a finished piece. Under the title Scambi (Exchanges), I made a certain number of separate sequences, which could be combined in succession and also in superposition after certain well-defined rules of connection. I personally made two different versions, and some other musicians, like Berio, used it as a speed exercise and realized their own versions.

Scambi was for me an extreme point in the direction of irregularity, of asymmetry and non-periodicity; it was a point from which I could well verify that one needed to proceed not so much antithetically (that is, in a purely opposite direction to the traditional periodicity), as synthetically, trying to combine all possible appearing things, from the most traditional to the most unknown. At first it was necessary, on the level of sound, to make available as a unified area the largest possible range of materials, from the extremely periodic sounds of traditional instruments, to the most irregular noises one can hear (for instance, in heavy industry). As Stockhausen's Gesang der Jünglinge had shown, it was now possible, without falling back on the stigmatized superficiality of "musique concrète", to use non-electronic sounds as well, either recorded and more or less transformed, or in a dialogue between loudspeakers and live performance. In practice, a recorded sound becomes one electronic impulse among others, even when provided with particular structural characteristics which make it recognizable. From that first degree of transformation (recording the sound), one can go further and further until the result can no longer be distinguished from a purely electronically generated sound. And, furthermore, to become audible, an electronic signal has to be transformed into acoustic vibrations through a loudspeaker, which in this case plays the part of the body of an instrument and is not principally different from other instruments.

In 1958 I began the composition of a work for loudspeakers and a small orchestra (35 musicians), the three parts of which I worked on until the fall of 1959. The tape was one of the first realizations we were able to make at the new studio in Brussels, established in early 1958. In the year after finishing this piece, Rimes, I had the opportunity to make another experiment using recorded sounds. In the meantime, Berio had composed his Omaggio a Joyce, in which all the sounds, even the most "electronic" sounding ones, were derived from the single recorded voice of Cathy Berberian, speaking the beginning of the eleventh chapter of Ulysses. What I made was not dissimilar to this piece; but the pursued goal and the result were very different. I was asked to compose the music for a TV ballet, which was to deal with the tragedy of Electra and to use large portions of the drama of Sophocles. I used only speaking voices (in a little scene in the second part, also singing voices) and many instrumental elements. I moved between an extremely faithful playback of these recorded elements and a very high degree of transformation; these transformations were so great as to give the illusion that the sounds were electronic. I used the different types obtained either to illustrate all the emotional "gestures" of the violent drama or to articulate the scenic divisions of the overall form.

In all these works a rather large concession seems to have been made to a purely intuitive point of view, where the rational principles of control seem to have been widely surrendered. But our basic intention remained, in fact, to overcome the dualistic opposition between intuitive and intellectual meaning, to reach a point where calculation and imagination would no longer

be separate. Stockhausen, once more, was the first to look at the work again from a systematic point of view. When I met him in 1958, he told me of the beginning of a new electronic composition, and he told me about the particular technique he was trying to generalize for this work. Already during all our earlier work in the studio, we had been able to verify that multiplying the speed of sound events on tape had very special and interesting properties. On one hand, the transients, or attacks (obtained, for example, by cutting the tape), grew with this process in their sharpness and brilliance; and on the other hand, if one had a sequence of short discontinuous elements, these had, when speeded up, a tendency to fuse with each other and eventually result in the impression of a continuous sound material. Already in *Perspectives* (1957), Berio had used this technique for one of the sound families of which the work was made. It consisted of tape-loops. These contained sequences of short sine tones that were periodic on two levels, namely: not only did all the elements have the same durations, but the pattern of pitch variation necessarily repeated over and over again. This material was used at different speeds, but not at the highest possible speed, at which some of the tones would have passed beyond 15,000 cycles and, therefore, become inaudible, but at which also the rhythm of the tones, the frequency of their succession, would have passed 15 cycles per second and, therefore, become heard as an independent, very low sound. This last possibility was, until this moment, considered to be an undesirable, parasitic phenomenon. But that was just what Stockhausen now intended to use and to systemize. He took recorded single electronic impulses with durations as short as possible and perhaps with various amplitudes, and he spliced them to one another according to a certain rhythm, so that he got patterns of periodic oscillation which he could repeat by using tape-loops. When he accelerated them until the time intervals between different tones of a sequence passed the lower limit of audibility, he obtained very beautiful complex noises which periodically modulated in amplitude and timbre; when he accelerated them more so that the time period of a whole sequence became the wave length of an audible frequency (at least 15 cycles per second), he got fundamental tones which he could transpose in all possible registers by accelerating them more or less, and which had a very rich "spectrum" or range of overtones. The time intervals he had established by putting isolated impulses together had now become the shortest parts of the vibration, measuring thousandths of a second, and so he was really controlling the whole internal process of the wave, the physical support and determining pattern of the audible sound and of its concrete qualities. That was, of course, a stroke of genius, which made possible once more the consideration of exhaustive control which had been the primary driving idea of electronic music in Cologne. But, instead of analyzing a sound event as the theoretical, often inaudible superposition of frequency components, he would now analyze it in its authentic chronological components, in the different successive details of the real waveform. Stockhausen took this possibility as a basic method for the production of the sound material for his new piece, *Kontakte*, which was finished in 1960; however, he did not apply such a rigorous technique for all the sounds he produced and accepted many more pragmatic methods for this operation. Since, of course, he didn't always wish to have the very brilliant color that the unchanged use of the sharpest impulses gives, he sometimes put the material into filters and kept only certain ranges of the spectrum — in other words, attenuating the sharpness of the waveform so that it came closer to a sine wave. Of course, the control of this operation was no longer so absolutely strict, and once more into the process of composing the internal structure of these sounds there came a certain degree of approximation, of indeterminacy, and of unmeasurability. In a theoretical text he wrote after finishing *Kontakte*, called "The Concept of Unity in Electronic Music" (published in *Perspectives of New Music*, Fall 1962), Stockhausen tried to vanquish this last difficulty, and that was a decisive, even if paradoxical step.

After having shown that either the pitch or the timbre, being functions of frequency, can be reduced to microrhythmic structure, he asserts that there remains an uncontrolled residue. In

fact, as we said before, in criticizing the early synthetic theory, the tone color or its physical support cannot be exhaustively predicted by the analysis of the frequency of components. The form of the wave directly corresponds to the perception of sound quality; and since it can have very different curves, it cannot be simply reduced to a purely microrhythmic structure. It has at least a two-dimensional pattern; it must be shown as a continuous variation of amplitude in relation to time. However, Stockhausen tried to reduce even this obstacle. When we have, he said, sequences of impulses that are so fast that the longest interval of time which appears between two successive impulses remains over the upper border of audibility and will then not be perceived as an individual frequency, we have the means to describe, through varying only the speed of this ultrasonic phenomenon, all different waveforms, and we have reached the point where all the aspects of sound, in all its perceptible qualities, can be reduced to a one-dimensional chronological description and through it to an exhaustive quantification. This is, in fact, a well-known radio technique called "frequency modulation". And, for the technical questions of producing and synthesizing sound, it can be of unquestionable interest. But when one tries to apply it, as was certainly the intention of Stockhausen, to a purely musical theory, that is, to a phenomenological level of perception, then it appears as a false extrapolation, from which, however, some decisive lessons can be drawn. Indeed, such ultrasonic sequences are not only presently incapable of being reproduced by loudspeakers, but if they were, our ears could never receive them. If they could, they would receive elements of frequency, and that would be contradictory to the explicit initial definition. For the ear — and, therefore, also previously for the loudspeaker — the only thing that counts is the audible modulation of the ultrasonic impulses and their lower waveforms, and so we have returned to our point of departure. The proof that the impulses themselves are here irrelevant to the ear is that their range can be arbitrarily changed without changing their modulation, that is, without changing the perceived sound.

This is, I believe, a very important finding that could also be of interest for disciplines outside of music, for such disciplines that try to reduce the concrete world to a purely rational net of description, to render it completely transparent to the mind. Reality, however, cannot be completely juggled away by our measures and calculations. Fortunately, it will always offer an irreducible resistance to our penetrating will, and not because it would be basically irrational. For instance, I think that the efficacy of modern technique (even if it looks sometimes like the work of "apprentice wizards"), is sufficient proof of the narrow relation, of the unquestionable communication, between the structures of our operating mind and those of the so-called "external" world (to which the instruments of this mind, the body and its organs of perception, obviously belong). But this world is too complex and its rationality too rich ever to be exhausted by the interrogative operations of our intellect. It cannot be encompassed by our intellect because it includes it. For instance, if we have appeared to describe a certain level exhaustively, we will quickly discover that there is a lower level on which the first one depends, and that this process goes on indefinitely. So, for instance, when radio engineers use frequency modulation, they don't forget that either the particles of the electric current or the molecules of the atmosphere are moving inside the waves they are using, and that they are to a certain extent ignorant of these subordinated facts, that their description, indeed, is only a statistical, and from a certain point of view, a macroscopic one. But that is not all, and that is not the most important! The microscopic phenomena, which are not perceptible in themselves, support larger phenomena, which become evident to our senses. These larger phenomena become evident because they exhibit a certain independence, because they constitute higher forms, effective entities, on their own level. So, for instance, frequencies are audible, as pitch or as timbre, because of the existence, on this level, of unities of wave which must be sufficiently definite and probably sufficiently recurrent. What is important, here, is the existence of specific unities, which we have

to grasp in their specific irreducible nature. The perception of these unities is synthetic and in the highest sense of the word, intuitive; it is the perception of qualitative individuality. But, once more, that does not mean that it is irrational and would not need formalization to realize and improve itself. To grasp clearly such a unity, we have to make operations of comparison; either we refer it (even unconsciously) to a background or to a larger context, which can at last be our own being, and which certainly has also to be seized in an immediate, intuitive manner, but which functions now as a measuring instrument, as the other term of a metaphor; or we compare the given unity to another unity of the same level, which shows at the same time identical and different aspects (even only the situation in space or time); or finally, we try to find from which perceptible parts our unity is really built, we ask which higher form these subordinated unities (which we must also at first apprehend) are building, defining the proper shape of this quality in which we are interested. Indeed the concept of shape is here, I think, of greatest importance, because it permits us to supersede once and for all the opposition between rationality and intuition, between calculation and imagination. Calculation, rational formalization, is here the more active side of our relation to reality; it is the operation with, the manipulation of, the intended objects; it is, we could say, the hand of our consciousness. The imagination, the intuition, the qualitative grasp of things is not so much the passive as the receptive aspect, the deepest looking eye of our mind. I think it is obvious how much they need one another, in the same manner as for a worker: hand and eye are absolutely complementary and indispensable and indissolubly bounded faculties. Separate from one another, they would be like a blind man and a paralytic. Between them exists, at least, a relation of the most immediate feedback. We must speak of "the eye of the hand" and "the hand of the eye".

This finding brings us to conclusions which cannot be forgotten. If the synthetic, intuitive apprehension of things is the primary condition of all further operations, among others the rational ones (and indeed we can say that, being operations, formations, they are all rational, to one or another extent), then it is not only possible but absolutely necessary to work with qualitative criteria on all levels of consideration. Then, not only single impulses, not only single pitches and even instrumentally related single timbres, not only figural units in the traditional sense, like melodies, chords, modes, etc., but also complexes of sounds and noises that have a picturesque association, and whole blocs of pre-existing, "historic" music can be used as elementary, no longer divided units of a higher composition. An interesting proof of the validity of this assertion can be given from Stockhausen's Kontakte, proving also that Stockhausen himself had undergone and understood this experience, and that he had practically accepted its consequences, even when in a purely theoretical way he still tried, for a while (not very long, in fact) to persevere in a unilateral way. After having studied and produced a great number of sounds of the type I have described or of its derivatives, and before beginning the actual composition with them, he stopped and changed his orientation rather radically. Instead of going on to organize his structure after purely quantitative points of view, he asked himself to which well-known instrumental sources he could compare his different electronic products; he asked with which kind of vibrating material they would be associated: wood, metal, or skin. He arranged all the collected types according to their greater or lesser resemblance to these basic types and then composed his piece according to this qualitatively preorganized palette. However, bear in mind that his knowledge of the internal structures had certainly contributed to this organization. To render this reference as functional as possible, he added for concert performances of Kontakte, two percussionists playing on different instruments of woods, metals, and skins, including a piano. Whoever has heard this piece remembers that its greatest beauty comes just from the fact that, out of these points of musical anchorage, the tape develops sounds which grow further and further and build large natural or "urban" landscapes, in which all the strange forces we meet in modern life seem to have undergone a first degree of harmonization and humanization.

In his more recent works, which belong more or less to the field of electronic music, Stockhausen has made further steps in this new direction of dialectical exchange between an undeniable will of strong and clear organization and the relaxed acceptance of what nature (even technical nature) can put at our disposal. In these works (Mikrophonie I and II, Mixtur), the sounds of voices or instruments (often used with a rather great degree of indeterminacy regarding the results of performed actions) are picked up by microphones, transformed by different electronic instruments, filters, modulators, tape recorders, etc., and at the same moment, or at least during the same performance, are played back in the hall through loudspeakers, mixing with the sounds directly produced by the performers.

From that point, one could, without being in contradiction with the defined principles, go as far as possible in the way of using preformed reality; one could, for example, pick up street noises, transmit them to a hall where they would be mixed with the sounds made by living (and possibly answering) musicians (perhaps using original sorts of instruments), and one could add, as a third part, the unpredictable program of a broadcast station, trying, through particular types of formalization, based on reaction and on adaptation, to work out a sensible result. Indeed, we know that John Cage, and other similarly oriented composers, created experiences very close to this possibility. However, the way I imagine such a possibility, and the way I believe other composers like Stockhausen could imagine it, is rather different from the practices of chance, which continue to play so great a part in the music of Cage. Instead of having confidence in all that can happen, I believe that we should try to intervene as profoundly as possible to assure, to the limit of our abilities, that a significant form results. The more complex and highly preorganized the material, the more it seems necessary to consider its specific possibilities, to try to find out what are the real parts of which it would be composed, and the genuine functions that all its components would assume in the whole. In other words, we would need to analyze it, but no longer in a purely quantitative way: rather by a method which would consider its own structure or shape as a qualitative one and develop itself according to this structure. So the acceptance of high unities of form and of meaning, far from excusing us from the lack of a rational and deepest possible knowledge, render this knowledge indispensable. Being convinced that organization and expression do not exclude one another, but on the contrary depend one upon the other, and that expression is bound to a certain degree of formal organization, well adapted to our organs of perception, and also that organization needs expression to be effective, we therefore believe that only by putting our whole effort into this best organization, can we develop the rich means of expression we need to master the tasks defined by the present situation. For instance, if we hope to be able to use means of automation and of computing to accelerate and to enlarge the field of electronic music, in such a way that our mastery of the material, or at least our communication with it, really grows, we must go on developing the microstructural methods initiated by Stockhausen in his Kontakte.

[Here I must mention the considerable work that has already been done in this field, especially in the United States. After having given this lecture, I had the opportunity to visit the main centers of this research: Urbana, Princeton, etc. I was impressed and pleased to see that what we had been dreaming of as the solution to the most burning technical questions of electronic music in the narrow sense had already begun to happen with the use of digital to analog converters. The main criticism I would make of all the present results of this work is that they are still too particular and too fragmentary (though I understand very well that beginning endeavors must always be elementary and partial). Instead of programming the computer as a sort of enlarged instrumentation, I think that one should try to define the most truly general criteria of forming and varying

waves, units and sequences (modulations). But this implies effort in an area of music theory (that might be called "generalized periodicity"), which has not yet been done, perhaps just initiated, to which the first experiences with computers will probably give considerable help.]

I think and hope that the near future will be oriented more and more towards the coordination of all existing possibilities. That does not mean a mixture which rubs out all characteristic properties. On the contrary, each possibility must be developed according to its own way and power. But one must also constantly undertake to compare the different results, to relate and to clarify one by means of the other. If possible, instruments must be electrified and electronic equipment must become like instruments. Microstructural work must be done to clarify as much as possible the nature of macroscopic images, and highest unities must be treated so that their smallest parts become imbued with necessity. Research must be made in all thinkable directions of specialization, and links must be established between them as often, as closely, and as compactly as possible. Then we can perhaps hope that today's music will help to find the language that today's world needs and which will help it to be itself, to be the best it can be.