10 On the Role of Art

You once said that the music of tomorrow might become a tool to change man, by influencing the structure of his thinking. Would you elaborate?

Art might set that change in train – by itself it's insufficient.

The structure of human thinking (its 'categories') is more or less universal. The question is whether its origins are genetic or whether it has come about as a result of civilization. Thinking might also have a structure which is basically different from what we know. In order to think differently, perhaps we would have to change the construction of our brain. Perhaps we're deaf and blind, because we see and hear only one way. How could the structure of the human brain be changed? Who knows, perhaps by art or through basic research.

Perhaps that's why you expect so much from the artist and want him to possess extraordinarily extensive knowledge in the field of sciences as well – in archaeology, palaeontology, logic and many other disciplines.

Yes, that's one of the reasons, but not the only one. The artist works with forms. Forms are present everywhere: in space, on the earth, in fauna, in society. They're close to musical form, so we have to be able to 'read' them, to understand them – only thus can we work consciously and create something really new. For that we have to know not only the forms of the present but also those that existed in the past. That's why we have to study palaeontology, palaeo-anything.

In Metastasis *and the Philips pavilion you proved that the forms used in music and in architecture are closely linked and can be substituted for one another. Are there any other examples for the relationship of the two?*

When I designed the undulating glass panes of the Couvent de la Tourette I was making use of the results of my research into rhythmic patterns. I've also mentioned the experiments I made with my old tape-recorder. I based my designs also on those experiments.

In designing a building we have to take into account factors such as soil conditions, the immediate environment and the landscape in which we place the building. At the same time we have also to think about the tiniest details, the material to be used as well as the form of the building.

In music, pupils are generally taught that they should start out from a cell (a theme or basic row) and create out of it the 'building' of the composition. However, the form is missing! Form has to be considered in itself – not only the form that comes about as a result of development but also the one that affects the details of the work – its cells. And, of course, we also have to be aware of the fact that the cells can affect form. We work with such synthetic methods in architecture and the same approach ought also to be used in music.

because in fact he controls only a segment of it. He has no control over the patterns he uses, over the instruments which were given him by tradition or the placing of the musicians. A composer can never boast that he has everything under control. Complete control simply doesn't exist, it never has done. Nor is it likely to exist in the future unless you say: All right, I'm going to construct everything. But even then I have to change my mind, because it was given to me and the universe itself. To create a different universe to live in.

There we have arrived at a deep problem – about originality and the existence of originality in the universe – which concerns the laws of physics. Are the laws the same now as they were millions of years ago, or have they been changing? Nobody can answer this question. Astrophysicists are trying to understand the universe on the basis of today's laws. Maybe they're wrong. That's why I call them poets. They invent theories about the creation of the universe based on limited information. Nobody can check their validity because you can't experiment with creating a new universe today. You have to make do with conjectures, that's all.

7 Form and Shapes

In the course of discussing the block-like construction of some of your compositions we touched upon the question of form. Your conception of form, however, has never come up in detail.

In some instances I've approached form from a theoretical point of view. *Nomos alpha*, for example, is based on abstract group structures. The *ST* programs were straightforward applications of stochastic rules.

The best solution is, I think, to live with form. That is, one builds it day by day, bit by bit. You may, of course, start out of a general idea, or a particular one, which you transform as the work progresses. Music is a kind of organism, it's slow to take shape, like the gestation of babies. This is the best strategy, for it ensures that the music will be deep and alive and will conform to all your past experience, in that domain and in other domains as well. I can't think of another way.

I read Harry Holbreich's analysis of your work,[76] *and he claims, for instance, that in* Alax *the harps appear at the point of the golden section of the composition as a whole. Was that a conscious decision on your part?*

He may be right. I don't know – but it certainly wasn't intentional.

Do such considerations ever motivate your work?

Not always.

In other words they do sometimes?

Yes, of course. In *Metastasis*, for instance, it was a conscious

decision. The lengths of sections of different density were computed in this way, the acceleration in the middle follows the golden section, and so do the departure points of the glissandos at the beginning. But this is by no means the rule. Musicologists may analyse scores and come up with their conclusions – and they may be perfectly right – but their findings need not indicate anything conscious on my part.

You know that he divides your work into so many sections – twelve, in the case of Nekuia, *for example. That's not something you intended?*

No, no, no. Composing is a battle. It should be an unconscious battle, provided you're there to criticize yourself. Things grow, as I've said, in an interesting way, or in an uninteresting way.

Work hasn't become any easier with the passage of years . . .

It's a struggle to produce something interesting. Of course, I can't define what I mean by that. From my point of view it can't be defined.

I think music must have an inner necessity, but again, nobody can define necessity, even in the case of traditional music. Analysis is no explanation – it's only a description of what's in the score. Analysts are observers who say: Here he has that and then he has that – they see the links, and see relationships, and they think this explains everything. But maybe it's not the case at all.

You want to create living organisms that have a life of their own, rules of their own, their own way of beginning and ending, and what happens in between should have a logical life of its own.

Logical or irrational. I think this is linked to a deeper tendency of human beings (perhaps the word 'human' can be omitted) as demonstrated by automata or by religion. Religion is a collective invention of man regarding his environment: it was the 'scientific' approach of the past to the universe. Science today endeavours to understand phenomena, and it also produces 'living' beings, such as robots or automata. This endeavour has characterized

mankind throughout history. When people wanted to draw water they built a machine to help, rather than doing it themselves. Today, with the help of computer science and electronics, whole systems are produced to control the manufacture of cars, aeroplanes etc., automatically. They are material beings that produce objects.

The next step would be to produce structures as well. The first attempts in that direction were the automata, which functioned according to set rules. As I told you before, the fugue is a forerunner of such an automaton.

Today a whole new area of science, 'Experimental Mathematics', affords some fascinating insights, especially relating to automatic dynamic systems, employing maths and computer graphics. Thus, many structures like the already mentioned cellular automata, or like those that possess self-similarities such as the Julia or Mandelbrot sets, are studied and visualized. These studies bring one right to the frontiers of determinism and indeterminism. Chaos to symmetry and the reverse orientation are now studied again and are quite fashionable! They open up new horizons, although for me these results are rather novel aspects of the equivalent compositional problems which I started dealing with about 35 years ago. This is why I'm interested in and working on these subjects.

Science in general and industry aim at creating abstract and physical automata. The work in this field is just beginning. First we shall arrive at a kind of computer based on biological matter on an ever smaller scale, and then at a kind of automaton based on a very complicated relationship of cells and eventually of atoms and particles comparable to our body and our brain.

It's amazing that all the components of our own bodies are beyond our control. We control our movements but our muscles receive impulses from the brain without any conscious knowledge on our part of the electric discharges in our cells. The same is true on many levels. What does a human being do? He eats, assimilates his food, works to produce food, makes love because that has also been part of his make-up for millions of years, relaxes, enjoys, kills or is killed. However, he is absolutely unaware of what kind of life is enjoyed by the cells in his organism which

belong to another layer. But there they are. Particles which are even smaller than cells also lead an existence of their own, in total independence. That's the smallest scale we've reached to date. But I'm sure there are even smaller, deeper scales than that. In the opposite direction you have all the systems of the universe, which is itself probably set into a larger universe. Religious people believe that these systems are worked by God. I don't think we need to use God as an explanation, unless you say that God itself is the universe. These layers are so immense and so distinct as to have no direct bearing on what we are. We are Russian dolls or a *mille-feuille* (the many-layered French pastry). We don't know much.

When you came to Budapest in October 1980 you expressed a desire to visit the Museum of Military History, to see the shields, swords and armoury on display. When I asked why you replied that you were interested in shapes. To this day I wonder what you meant. Does the shape of a helmet bear an indirect relationship to musical form?

Probably not much. It has to do with the history of helmets. There are all sorts of shapes, some of which recur at various points in history, whether intentionally or not. For instance, the resemblance of the one in use in the American army to that of ancient times was probably purely coincidental. The Germans, however, consciously copied theirs on ancient Greek helmets.

It's true, however, that the question of shapes has wide-ranging connotations. Think of the undulating snake shape, for instance. It occurs in many different places: streams flow in the form of sine waves not just in mountainous areas but also across flat lands. Einstein provided an interesting explanation for that: in his view it comes down to the rotation of the earth.

This is of importance also in music: the presence and absence of tension. Also in another time-art: films. In human life, too. Shapes are everywhere at various levels, forms corresponding to some inner necessity.

They're sometimes close to all sorts of projections of our mind. When you say cloud – all right, but a cloud of what? Of mosquitoes – that's one example. Or a cloud of vapour in the sky. Or a cloud of people – that is, a crowd. Or a flock of sheep. The cloud, then, is a form that occurs in many places. How to produce one or how to make it change is an intriguing question – it wasn't one that music was concerned with because it didn't have the necessary tools until I arrived [*laughs*] and realized that ideas and techniques used in science – that is, probabilities and the statistical approach – could be employed.

I believe that is what is lacking today: a theory about shapes. Perhaps in twenty, thirty, forty years' time, fundamental shapes will be classified, along with their applications and expressions in different fields of observation and production.

Another fantastic shape is that of trees. Arborescences. Veins and nerves have that shape. Lightning has it. All software is based on a tree-like construction. This is another widespread form. And what's the meaning of a line? How does it come about? It's as if a point gave birth to a next point and so on until you get a line. What is a line of electromagnetic field, or of a photon that travels in space? What does it mean?

I was recently asked to write a paper about time.[77] I wrote that time was a kind of illusion, and that in fact time is an aspect of space. However, space may also be an illusion. It could itself be just a manifestation of the rebirth of a point – that is, of some entity like the photon or like energy. It's rebirth, and when you say rebirth you create at the same time both space and time.

Therefore the idea of the tree shape is basic, both in nature and in logic, and potentially also in music. I've used it in music in the form of bushes, arborescences. Because instead of having melodic patterns and polyphony made up of single lines, you can have a full bush and transform it by rotations, zooms, alterations of all kinds.

also follow a symmetrical curve. In the *Diatope* I used an experimental curve that can be controlled automatically. If, however, you want a more realistic approach, you should take the Doppler effect[80] into account. You know, the effect by which a sound seems to rise higher and higher in pitch as it approaches you, and to sink in pitch if it goes in the opposite direction.

Have you ever considered the quality of the loudspeakers? This is a subject that Péter Eötvös has now decided to experiment with.[81] *He says that, if you put an instrumentalist and a speaker behind a curtain, you can immediately tell the machine-produced sound from the live one. He would like to develop speakers where you can't distinguish between the two.*

That's impossible for the time being. It's a matter of technology. The loudspeaker is the end of a chain. Even if you have very good tapes, analogue or digital, the sound will either be distorted as it passes through the speakers, or it will acquire a particular timbre which you can identify as that of the speaker. This is because speakers have a built-in colour; it can of course be improved, but it won't be easy.

Has this been worrying you at all?

Yes, of course. I know that the speaker has an unmistakable colour which is the speaker colour. Now there are good speakers and bad speakers. There are ones used for pop music where large volumes of sound are needed. The instruments they use and the voices are in the middle range anyway. In order to have power they introduce filtering which removes the high frequencies that ensure quality.

9 The Composer in Society

At the ending of István Szabó's film Mephisto, *based on Klaus Mann's novel of the same title, the actor Hendrik Höfgen, who is the main character (he was modelled on the actor Gustav Gründgens, a former friend of Mann's), is forced into a situation where he says, to save his skin: I'm only an actor! The star of Nazi Germany, for all his powers, now protests his insignificance in the social hierarchy.*

In April 1933, when Otto Klemperer appeared before a labour tribunal, he was eventually forced into a situation where he said: After all, I'm just a conductor. As in the film, Klemperer, a god in his own realm, protested his actual insignificance in the social hierarchy.

Could the same happen to a composer? Can anyone conceivably refer to a composer as 'only' that? What is his position in life? How seriously is he taken?

To cut it short: how do you see your role in society?

I can't see myself as having any role. I feel less and less optimistic about it. I think whatever one does can be taken for granted or rejected.

In the past, when sailing ships were plying the oceans, they would put a message in a bottle and throw it in the water to signal they were in distress. Eventually it would be found by somebody who would, hopefully, call for help. It is this role that art is called upon to play. Many artists fight each other, for power, money, recognition – but in the final analysis that is what it comes down to: you throw a bottle in the water and somebody picks it up.

It follows that what you are doing is only your concern – society shouldn't be involved. When you're trying to do something you should feel absolutely alone, like a spark in the blackness of the universe. That's all. You're all by yourself. This connects with what I said on a more philosophical level about originality. On the level of the individual, that's how he should feel when he is creating something.

I remember, in the early days, when I was trying to compose, I was very much in love with Bartók. The pieces I wrote sometimes bore traces of his influence. Slowly it dawned on me that I had to be much freer, much more individual.

Was that before Sacrifice*?*

Yes. I had to be different, otherwise it was no use. Bartók had done what he did much better than I could. I was also in love with Brahms but that didn't mean I had to compose like him. Equally, I've expressed my admiration for Varèse and people have jumped to the conclusion that I must be a pupil of his, or have been influenced by him. But I wasn't influenced by Brahms, at least not directly, or by Varèse. Because you admire something, it doesn't necessarily mean you resemble it. Imitation is an existential mistake. So, to escape from that trivial cycle of relationships in music, the musician, the artist, must be absolutely independent, which means absolutely alone. You must be convinced that you're doing what you must be doing, with the means at your disposal, at that particular time. If you had other means you'd be doing something different.

There may be a trend running through centuries and millennia more or less independently of local culture. Perhaps it explains how ideas invented thousands of years ago remain valid, in our beliefs, in our appreciation. Who knows what rules have kept these ideas alive and powerful. They may disappear temporarily to emerge again later. Egyptian art vanished with the Greek or Persian invasion in the fifth century BC and was rediscovered only in the nineteenth century. The so-called pagan art of antiquity came to light again in the Renaissance.

Figuratively speaking, when you are composing you lower a bucket into the well of your ideas. Aren't you afraid the well may one day go dry?

That happens every day. Is it worthwhile, what I'm doing? Will I make the right decisions? How do I know the answer to that? These are questions that I keep asking myself.

You told me earlier that your ideas emerge from your unconscious and that you have to decide if they're interesting or not. If they are, you keep them; if not, you push them right back where they came from. But what happens if the ideas stop coming?

Look. I made decisions in the past because I thought at the time they were necessary. I wasn't convinced they were new. This is again something you can't control: whether something is worthwhile or not. You must nevertheless go on working. This lack of stability is in fact one of the interesting aspects of composing [*laughs*].