

Mathematics, Ethics, and Time in Music

Albert Breier in Conversation with Peter Graham
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Graham

You dealt with mathematics a lot recently – some people say music and mathematics have a lot in common. Apart of the physical aspect of tone and some structural means, I see also use of formulas (especially in historical music) as one thing, which is somehow similar in both fields. In your view, the way of mathematical thinking influences peoples approach to musical creativity, is that how you view it?

Breier

It is probably true that there exists no music which is totally free from mathematics (and the reverse seems also to be the case – the famous French mathematician Jean Dieudonné called mathematics “the music of reason”). So even composers who do not deal with mathematics consciously in their scores have to be aware of the day when some musicologist discovers most intricate mathematical devices and structures in their music...

The problem with formulas is – in music as in mathematics – that they have the tendency to claim universal relevance and applicability. The Baroque, the heyday of mathematical and musical formulas, developed the idea of a *mathesis universalis*, a universal system of thought based on mathematics. (Leibniz, the greatest propagator of *mathesis universalis*, is today in high esteem as the most important forefather of computer science.) Though maybe the great popular success of Baroque music is partly due to its formulaic construction, I doubt whether true musical creativity can be based on this method.

For me the problem is rather to get rid of mathematics in my music. I have tried to banish all written numbers from my scores recently, which is not so easy. Mathematics turns up in the most unexpected places, and I have to be very careful – sometimes it is even necessary to make one's peace with the enemy.

(Not wanting to be unjust, I have to add that I feel quite close to a mathematical movement of the early 20th century called *intuitionism*, inaugurated by the Dutch mathematician L. E. J. Brouwer. To Brouwer we owe some quite paradoxical statements about mathematics, e. g., “mathematics is more an action than a doctrine”. And Brouwer also said, “All mathematics is sinful”...)

Graham

Mathematics and music are considered highly abstract disciplines, beyond good and evil. Both of them are, however, used or abused for either good or bad aims. Aren't we in the end always confronted with ethics, even if we want to avoid this question?

Breier

Mathematics, especially higher mathematics, has always succeeded in creating an aura of utmost purity around itself. Some composers have tried to gain some profit from this aura; their idea was that mathematical purity automatically produces musical purity. But this on the whole does not seem to be the case. What is more: mathematical purity is by no means identical with ethical purity. Surely the bomb that destroyed Hiroshima was a triumph of pure mathematics (some say even more than a triumph of modern physics). The relation between mathematics and ethics remains almost unexplored. But our daily life becomes more and

more influenced and directed by numbers, and I think it will be of increasing importance to take into account the ethical implications of this fact.

For me, *pure mathematics* and *pure music* are myths. That does not mean I do not respect the search for purity in music (I am a great admirer of Webern), but mathematical strictness of structure is decidedly not the only way to achieve it. (After all, the mathematical strictness of Webern's scores should not be overemphasized, as the Darmstadt school did – what's more important is the free lyrical sweep.)

Graham

In so called „European tradition“ (roughly 16th-19th Century) was perhaps the main stress on vertical aspect, the accord (even in polyphonic music). During the 20th Century we can observe a shift of the emphasis to horizontal aspect – to time. What's your view of this process?

Breier

The Middle Ages created houses for God; in the 16th-19th century houses for human beings were built. Now architecture has been in full decline for over a century; people are always on the move, so music, too, cannot build solid vertical structures any more.

Like people, music is also on the move: it has the great advantage that you can carry it with you. It is possible to sing while walking, even to play an instrument...

The increasing awareness of time opens new possibilities for music: after all, music deals primarily with time, and it is quite strange that this fundamental fact seems to have been ignored (at least by theorists) for such a long time.

Of course the problem with time is that it can't be spoken about objectively. Even for the physicists it remains largely a mystery, as for the psychologists and the philosophers. So saying something valid about musical time is not easy; often it becomes necessary to use the language of the poets...

Graham

What about your personal approach to musical time?

Breier

Sometimes I am dreaming of a paradisiacal state, where Music and Time do not differ from one another, but merge completely... I know that with human means this cannot be achieved; music as an art form remains always to some extent „out of time“. But we can prevent its becoming hostile towards time. Maybe some of the European masterpieces valued most today are in fact inimical towards time.

Dealing with time is a dangerous thing; time decidedly has its horrors. But perhaps music can establish a kind of friendship with time, perhaps it can make audible the flow of time, which is never monotonous.

Graham

European music was developed in relative isolation from the other musical cultures. Are there some principles, which can be universal? I know you see very interesting parallels between European symphonism and Chinese painting...

Breier

It may be possible that „musical thinking“ does not manifest itself necessarily in the musical productions of a culture. It may be more apparent in painting, or in poetry (or, for that matter, in mathematics...). For example, the poetry of Verlaine has greater musical power than the music of, say, Charles Gounod.

I always had the impression that the great Chinese painters possessed a much stronger musical genius than the Chinese musicians. (Of course I do not want to belittle the wonderful achievements of Chinese *qin*-music.) In their long horizontal scrolls they show a feeling for time-proportions which may be called truly symphonic (already a century ago the sinologist Berthold Laufer compared the half-mythical Chinese master painter Wang Wei to Beethoven).

I think it is difficult to speak of musical principles of universal validity. But common to all mankind may be a *musical spirit*, which however is free to manifest itself in a lot of very different ways.

Graham

Is there any question of crucial importance for you, as a composer?

Breier

Though I won't bore you with a long complaint about my personal difficulties in being a composer, I would like to say (as doubtless has already been said many times...) that the role of a composer in society is most unclear today. In a way only dead composers can be said to "exist". Living composers are very unsure about what they "are" or "should be"; even to the point that they don't know whether they should call themselves "composers" at all or use some other name...

Will there be in the future an institution which the composer can serve without having to sacrifice his integrity? As far as I can see today there is none. I cannot predict the day when loneliness – that modern illness – will at last leave composers. But in my opinion I am never working for myself alone.

Without friendship I could not survive. But friends are few and scattered around the world. Nevertheless, I shall not abandon hope.