

# EINE MASCHINE KANN DEN KÜNSTLER NICHT ERSETZEN

*Interview | 15. Jänner 2013*

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## A MACHINE CANNOT REPLACE THE ARTIST

*Interview | 15 January 2013, 17:19*

Erica Bisesi recognized that the methods used in physics can be applied to other subjects (picture: J. J. Kucek)

**Erica Bisesi is an interloper between natural and social science. The former astrophysicist is now exploring the expression of feelings through the music.**

STANDARD: You worked previously as an astrophysics researcher and now as a musicologist. Why the change?

BISESI: When I was about 15, I began to get interested in physics. I was fascinated by two things: first, the sky, which for me is an artistic picture of the universe and points to the origin of all things. Second, the laws governing matter and its components. At the university, I learned astrophysics and particle physics at the same time. The development of the cosmos can now be explained on the basis of the properties and spatial distribution of matter.

STANDARD: What about music?

BISESI: I started playing the piano at age of five, then I was soon ready to perform in concerts. As I finished my PhD in cosmology, I found myself in a strange situation: I was a pianist and a physicist. Then I had to decide what to

do with my life. At that time, I discovered that one can apply the methods of physics to other subjects, such as the analysis of musical pieces. Here, too, one needs theoretical models that can be checked against reality.

STANDARD: Among physicists, it seems that musical talent is not unusual. Einstein played the violin, Heisenberg the piano. Are there links between analytical thinking and musical ability?

BISESI: Music not only evokes feelings, it also has a certain structure - if you want: a grammar. And this is closely related to logical thinking, which is well developed in the physical sciences. So I can well imagine that there is a double interest.

STANDARD: How did you manage to achieve high academic standards in two subjects?

BISESI: While studying in Italy I had the opportunity to teach acoustics and psychoacoustics at a conservatory. My supervisor encouraged me. So I started to consider the physical and psychological principles of music. After my PhD, I was awarded a grant to conduct research in this area at the Royal Institute of Technology in Stockholm.

STANDARD: Then you went to the University of Graz, where you now manage a project entitled "Expression, Emotion and Imagery in Music Performance". What is it about?

BISESI: I must first describe what I did in my previous project. It was about the development of models describing musical expression in piano performance. Tempo and dynamics are generally provided in a composition, but each pianist interprets these indications individually. We may regard this individual expression as deviations from the score. Duration and dynamics of notes can be coded. In my current research project, we are now investigating the relationship between expression and emotion.

STANDARD: The emotional content of the music itself, or its interpretation?

BISESI: Both. The easiest way to express emotion in music is the choice of a major or minor key. The same is also related with the cadences, with the sequence of chords and with the structure of the melody. Of course, the musical expression of the musician emphasizes her or his feelings, and she/he adds some extra nuances to the composition.

STANDARD: Could you model, for example, Glenn Gould's style?

BISESI: Possibly. We are trying to classify performance styles on the basis of many different parameters. For example, depending on the tempo: a performer who is used to play fast, could have another view of the composition - he might for example conceive of particularly long phrases. For the moment, this is just an hypothesis.

STANDARD: Could a machine someday replace the artist?

BISESI: There are researchers who believe this, but I am not one of them. Ultimately, one would have to model the human brain as a machine, and that will fail because of the complexity of the brain.

STANDARD: In 2013, one cannot fail to mention Wagner and Verdi. What is so special about them?

BISESI: Wagner is historically important because he prepared the way to move away from tonal music. With his concept of infinite melody, he contributed to the weakening and dissolution of classical harmony. After him, Western music changed fundamentally. This happened at the same time as the rejection of determinism in physics, which was perhaps not an accident. Verdi's contribution is not dissimilar to that of Wagner's "melodrama" - anyway less in terms of tonality, but rather in relation to the "Leitmotiv". He

changed the [typical] structure of Italian opera, and raised the dramatic expression of emotions to a new level.

STANDARD: The heroic sound of a Wagner opera - what makes it up, from a musicological point of view?

BISESI: The sound is partly in the composition - in the structure of the melody and in the arrangement of harmonies. But also in the particular combination of instruments. Wagner used very often brass.

STANDARD: Do you know the research project “Big Bang acoustics”? In U.S. researchers have tried to translate the Big Bang into music.

BISESI: Yes, I have heard of this “Cosmic Symphony.” Even if there is more noise than music. Incidentally, I once tried something similar. As a student, I wanted to translate the laws of nature into a composition. The problem with this is that the conditions in the equations are so extreme that they overwhelm our perception. In other words, the perceived difference between pianissimo and fortissimo is too small to reflect the variation in nature. (Robert Czepel / DER STANDARD, 16.1.2013)

*Erica Bisesi (42) from Gorizia (Italy) studied physics at the Universities of Trieste and Udine. Since 2009, she has been a researcher at the Centre for Systematic Musicology, University of Graz.*