BRIDGES Mathematical Connections in Art, Music, and Science

## **Time-Space of Music**

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There are two unifying powers in a cosmos of music: force field of tonality and structured time. Combination of these powers constitutes tonal chronotope.

When explaining music with help of visual arts and mental images of science and philosophy, we extrapolate on temporal art of music such spatial categories as 'module', 'negative space', 'circular' and 'square', 'horizontal' and 'vertical', as well as notions of 'color', 'hidden dimension' and 'force field'. We can also present music in terms of geometry. The convenience that visual arts provide in explaining music points toward interconnectedness of the fine arts.

Images of music transcend acoustics; they exist in acousmatic realm. The highly abstract process of auditory pattern-recognition in music, the *unconscious calculation* in Leibniz' words, results in a re-creation of emotional (non-discursive) states.

The tonal chronotop is not an invention but a result of gradual discovery; our intuitive awareness of the tonal field arrives to us as a cultural gift. We resonate physically with sounds in music, and we resonate emotionally and mentally with ideas expressed through organized sounds. The non-uniform space-time of our life finds its expression in the non-uniform tonal chronotop of music. Music humanizes time like visual arts humanize space.

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Marina Korsakova-Kreyn was trained as a classical pianist in her native Russia and graduated from Gorkii (Nizhnii Novgorod) Conservatory; she also attended Mathematics and Physics Department at Gorkii University. During last few years she has been working on a series of lectures on 'Nature of Music, Space-Time of Music' that attempt to explain elements, matter and space of music with help of images of visual arts and mental images of science and philosophy. Her lectures-performances on interconnectedness of the fine arts were presented at art schools throughout the United States and in Russia.

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