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## The Processes of cultural evolution of music in the environment of digital technologies

In the doctoral dissertation *Processes of Cultural Evolution of Music in the Environment of Digital Technologies*, author Wojciech Krzyżanowski presents an interdisciplinary approach to the transformation and functioning of musical culture from the perspective of memetics. The starting point is the assumption that the components of music—like genes—constitute cultural replicators, subject to processes of mutation, selection, and inheritance. The author develops the thesis that musical memes evolve toward increasing agency, understood as the ability to exert effects in the world and provoke their own replication, both within artistic practices and technological systems.

The first part of the dissertation discusses selected examples of evolutionary thought on music, beginning with Charles Darwin's views and ending with biomusicology. It then presents examples of popular musical internet memes—Dancing Baby, Rickrolling, Keyboard Cat, Darude – Sandstorm, and MLG Airhorn. These serve as a starting point for an analysis of the mechanisms of dissemination and transformation of music in the digital environment.

The second part is devoted to the foundations of memetics and their critical analysis. The author identifies the main objections raised against this discipline and presents arguments supporting its usefulness in the study of musical culture. Steven Jan's memetics of music is juxtaposed with the actor–network theory, Stafford Beer's viable system model, and Michael Levin's concept of multiscale competency architecture. This comparison allows for a reinterpretation of music as a phenomenon embedded in a network of distributed agency involving both humans and technologies.

The third part develops the author's original concept of a memetic history of music. It presents several crucial turning points in the coevolution of music and technology, in which the agency of non-living musical culture items increased at the expense of the diminishing agency of the individual human. These stages include, among others, the proto-earworm stage, the transition from orality to literacy, the emergence of academic music theory and institutions functioning as memplexes, and finally the advent of AI technologies.

Particular attention is given to contemporary recommendation systems (Spotify, YouTube, TikTok) and generative artificial intelligence in musical applications. The author argues that recommendation systems are products of advanced memetic evolution that not only model the trajectories of musical popularity, but also shape listeners' preferences. In doing so, these systems take over the traditional roles of critics, DJs, and musical curators, exemplifying the growing agency of non-living elements within musical culture.

Generative AI systems, especially those described as AI agent or agential AI, are also presented as instances of significant non-human agency in music. The author observes that as these generative systems continue to evolve, they exert an increasing influence on musical practice itself.

The final part presents case studies concerning the functioning of musical artificial intelligence. The first case study introduces a basic analysis of the diachronic variability of the semantic field

of the word “music”, based on a large linguistic corpus. The author argues that such an analysis also captures certain aspects of the cultural evolution of music itself.

The second case study demonstrates the capabilities of contemporary AI systems in musical meta-creation—that is, the autonomous production of programs designed to create music.

The dissertation aligns with the current of posthumanist musicology, viewing music as the outcome of interactions between human and non-human actors within a global information ecosystem. The author aims to demonstrate that, despite its controversial status, the memetic perspective provides a coherent analytical framework for examining contemporary musical culture. The outlined research program of “memetics of music” offers an explanation of how digital technologies and artificial intelligence have become not merely tools for the reproduction of culture, but also its autonomous co-creators.