**Tracing Scientific Genealogies in AI Music Research**

**Supervisors**: Fanny Gribenski (IRCAM, CNRS, Sorbonne Université, New York University), Georgina Born (University College London), Pierre Saint-Germier (IRCAM, CNRS, Sorbonne Université)

**Background:** It is increasingly obvious that music is a "prominent [cultural] testing ground for technological change" (Hesmondhalgh and Meier 2018, 1557). The past decade has seen a rapid expansion of work on the design of generative AI music models across commercial production, open-source corporate initiatives, academic research, and independent creative experimentation. The rise of AI music models has ushered in a need for unprecedentedly interdisciplinary fields of research spanning the social sciences, the humanities, and the AI-related sciences. Building on the interdisciplinary methodologies at work in digital music studies (Born 2022), AI music studies utilize approaches that exceed the bounds of traditional musicology by integrating relevant fields including science and technology studies (STS), history of science, media studies, and sound studies.

While previous works in this field illuminate key cultural and social influences on how AI is mediating musical practice (Seaver 2022, Sturm 2024), they overlook a crucial vantage point: the impact of the scientific epistemologies that inform AI's applications to music. This is a central problem for the musicological study of AI music for two reasons. The first is that AI music technologies, and public engagements with them, are now mediated implicitly by concepts, languages, representations, and techniques derived from STEM research, such that STEM inheritances need to be traced and made explicit in order to understand a given technology's musical effects. The second is that, as STS tells us (Akrich 1992, Oudshoorn and Pinch 2003), researchers involved in the design of digital music tools project their users in consequential ways that affect the kinds of music that can be produced, often only reflecting certain constituencies of musical practice (Prior, 2010). Taken together, these issues highlight key research questions concerning how engineers' and researchers' scientific "styles"—e.g. choice of mathematical frameworks, model architectures, and justificatory logics, as these may differ between research communities—mediate the musical outputs of generative AI music systems.

**Objectives:** This doctoral project addresses the interplay between scientific AI research and musical practices. The project will examine how differing scientific epistemologies within AI research—among them signal processing, deep learning, computer science, statistics, and pure mathematics—play a role in forming the aesthetic, cultural, and social implications of AI music models, and likewise, how the pluralistic musical landscape of AI musical practices reflects back onto these scientific epistemologies. The candidate will undertake a case study: an auto-ethnography of scientific collaboration with a research group at *l'Institut de recherche et coordination acoustique/musique* (IRCAM), a research center for music technology which pioneered early audio signal processing and AI music research for contemporary music creation. The research group in question is made up of AI researchers, signal processing researchers, programmers, composers, sound designers, and musicians developing both a new dataset for contemporary music and a multi-modal AI music composition environment.

This "hybrid" group structure is a particularly interesting case study due both to its interdisciplinarity and to its role in carrying out AI research within the unique context of contemporary musical practice at IRCAM. Fieldwork is necessary to dissect the plurality of different styles of AI research performed by members of the research group, some of whom are motivated not only by scientific considerations but also by musical imaginaries. It is also necessary in order to decipher how these motivations may be conditioned by wider social, cultural, and institutional forces. In tandem with these investigations, differing scientific inheritances and technical assemblages at work in the production of AI music models will be traced (e.g. LLMs, transformers, diffusion models, and other deep learning models), as well as the different data representations employed in these models (e.g. time-frequency representations, audio descriptors, and symbolic representations).

Given these aims, the ethnography at the centre of the project will be supplemented by an analysis of why, in this specific musical context, certain techniques in scientific AI are favored over others. This will entail the notion of scientific *genealogies*, understood by Foucault as an inquiry into the heterogeneous, contingent, and historically situated conditions of possibility that give rise to present-day discourses (Foucault 1977, Garland 2014), and which—when paired with ethnographic study—serves as the means through which these longer

historical formations can be identified and their contingent sources traced (Born 1995). Indeed, the construction of genealogy by way of ethnography will make it possible to uncover the processes by which IRCAM's historically-situated scientific knowledge (Haraway 1988) has come to shape its AI music research in the present day. The project will therefore contribute a nuanced analysis of the pluralistic cultures of contemporary AI music research, and generate a more scientifically-attuned methodology for studying them than previous work, even from the field of STS. It will provide a frame of reference that is lacking for similar work in the future.

**Adequacy to SCAI:** The project takes AI both as an object of interdisciplinary inquiry and, through participant observation in an AI-model-building research team, as a field of research. Furthermore, the effort to bridge the gap between the humanities and sciences precisely fits SCAI's 2026 call for projects.

**Supervision team:** Fanny Gribenski, an expert in Science and Technology Studies in relation to music and sound (e.g., Gribenski 2023), will team up with the anthropologist of music Georgina Born, who has worked extensively on IRCAM (Born 1995), the digitization of music, and AI music (Born 2022), for a co-tutelle between Sorbonne-Université and University College London. Pierre Saint-Germier will provide co-supervision as a philosopher of music and of machine learning (Saint-Germier et al. 2026).

**Candidate Profile:** The ideal candidate will have a strong background in both scientific AI research and critical music studies—music composition, music history and theory, musicology, and sound studies. They will have the skills in computer science to actively participate in the research group during fieldwork, helping in the implementation, training, and testing of both the dataset and compositional environment.

**References**


Akrich, M. 1992 "The De-scription of Technical Objects." In *Shaping technology/building society. Studies in sociotechnical change,* W. Bijker and J. Law eds, MIT Press: 205-224.

Born, G. 1995. *Rationalizing Culture: IRCAM, Boulez, and the Institutionalization of the Musical Avant-Garde.* University of California Press.

Born, G. ed. *Music and Digital Media: A Planetary Anthropology*. London: UCL Press, 2022.

Foucault, M. 1977. "Nietzsche, Genealogy, History." In Language, Counter-Memory, Practice: Selected Essays and Interviews, D. F. Bouchard ed, Cornell University Press: 139–164.

Garland, David. 2014. "What Is a 'History of the Present'? On Foucault's Genealogies and Their Critical Preconditions." Punishment & Society 16(4): 365–384.

Gribenski, F. 2023, *Tuning the world. The Rise of 440 Hertz in Music, Science, and Politics.* University of Chicago Press.

Haraway, D. 1988. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective." Feminist Studies 14(3): 575–599.

Hesmondhalgh, D. and L. M. Meier. 2018. "What the Digitalisation of Music Tells us about Capitalism, Culture and the Power of the Information Technology Sector." *Information, Communication & Society 21(11)*: 1555-70.

Oudshoorn, N., and T. Pinch. 2003. "Introduction: How users and non-users matter." In *How users matter. The co-construction of users and technology*, MIT Press: 1-25.

Prior, N. 2010. "The Rise of the New Amateurs: Popular Music, Digital Technology, and the Fate of Cultural Production." In *Creative Industries and Developing Countries: Voice, Choice, and Economic Growth*, D. Barrowclough and Z. Kozul-Wright eds, Routledge: 130-45.

Saint-Germier, P., B. Matuzsewski and F. Bevilacqua. 2026. "Machine Learning, Understanding, and Interaction", *Philosophia Scientiae*, *forthcoming*.

Seaver, N. 2022. *Computing Taste: Algorithms and the Makers of Music Recommendation*. Duke University Press.

Sturm, B. L. T. ed. *Collected Materials of The First International Conference in AI Music Studies: Prospects, Challenges and Methodologies of Studying AI Music in the Humanities and Social Sciences.* Stockholm, 2024. https://kth.diva-portal.org/smash/get/diva2:1933134/FULLTEXT02.pdf