ERC Consolidator Grant 2025
Research proposal [Part B1]
(Part B1 is evaluated in Step 1 and Step 2,
Part B2 is evaluated in Step 2 only)

After Sampling Culture: Synthetic media as culture in twenty-first century music

SYNCULTURE

Cover Page:
- Name of the Principal Investigator (PI): Christopher Haworth
- Name of the PI's Host Institution for the project: University of Birmingham
- Proposal duration in months: 60 months

Arising in recent years to refer to the collective products of generative AI, the concept of 'synthetic media' indexes the rise of a new world in which nothing of what we see or hear online is immune from being fabricated. Through its 60+ year engagement with synthetic sound, music stands to offer unique, historically-grounded insight into synthetic media as culture, thus moving beyond the naive realist and alarmist framing of real vs fake that dominates popular commentary. However, to date synthetic media has been misrecognised: either analysed as part of a disruptive wave of AI appearing from nowhere in the 2010s; or treated as a benign appendix to debates around sampling culture, themselves inherited from nearly a century of criticism on the status of art in the age of mechanical reproduction. SYNCULTURE develops richer, historically-sensitive methods of analysis to understand the cultural implications of synthesis as they cross mathematics, engineering, music, industry, and law. It does this, first, through an ambitious series of case studies that will 1) analyse synthetic media across art and popular styles; 2) develop a new analytical terminology, informed by vernacular discourse; 3) retheorise notions of representation and modelling in synthesis; and 4) develop the theory of synthesis culture for contemporary music. Second, through a novel interdisciplinary and mixed-methodology framework incorporating musicology, digital methods, and practice-research, and experimenting with collaborative methods for representing, interpreting, and deconstructing the terse formalisms of synthesis and signal processing. Termed the 'slow digital humanities', it will yield a critical reader on synthesis methods, having implications for both scholarship and pedagogy. With 4 early career, 2 established scholars, and a PI with 15 years experience working between the humanities, engineering, and arts, SYNCULTURE will develop a new critical paradigm for contemporary music.

Section a: ***Extended Synopsis of the scientific proposal***

1) Overview

Synthetic media refers to the collective products of generative AI, whether they be text, video, photos, music, or sound. Vernacularly termed 'deepfakes', 'clones', and 'AI mimics', the growth of the concept indexes the rise of a new world in which nothing of what we see or hear online is immune from being synthesised. Through its 60+ year long engagement with synthetic sound, from Harold Bode and Max Mathews in the late 1950s to deepfaked pop in the present, music stands to offer a unique, historically-grounded insight into synthetic media as culture. That is, the case of music can help us move beyond the naive realist and alarmist framing of real vs fake, transparent vs opaque that dominates popular commentary, to understand synthetic media in terms of its poetics, aesthetics, techné, and politics. However, to date scholars have misrecognised synthetic media in two key ways: either they have analysed it as part of a disruptive wave of artificial intelligence appearing from nowhere in the 2010s and affecting all media equally; or they have treated it as a benign appendix to debates around sampling culture. This misrecognition reflects a longer-standing tendency in the cultural analysis of music's mediation by media technologies.

Sound and music synthesis generally is poorly understood as culture. As synthetic media becomes an ever more pervasive part of our digital lives, reviving debates around amateurism, deskilling, automation, and imitation that accompanied the first wave of commercial synthesisers, it is time to develop a richer understanding of this important cultural technique, both in the present and in history

Across a series of case studies that address synthesis in terms of 1) contemporary musical practices across art and popular styles; 2) discourse and terminology; 3) theories of representation and modelling: 4) engineering practice; and 5) property and ownership, SYNCULTURE will develop an integrated, empirically and historically-grounded theory of **synthesis culture** for contemporary music and sound. While this is understood as a corollary and update to the dominant theory of sampling culture, my aim is not to imply a historical succession. To the contrary, I argue that the culturally-sedimented binary of sampling and synthesis is challenged by data-driven acoustic modelling techniques that incorporate elements of both. I therefore pose synthesis culture as a question rather than a resolved concept: what *is* the cultural technique by which we should understand the dialectic of reproduction and construction (Demers 2010) in the present? And what relations does this cultural technique bear to 20th century sampling and synthesis?

Addressing synthesis as culture means contending with the gulf between the critical humanities and engineering-mathematics. I address this in three ways: 1) through personnel, who are / will be interdisciplinary musicologists and practice-researchers whose expertise spans creative practice, critical analysis, engineering, and digital methods. The PI embodies this as a scholar who has published across musicology, music tech, and practice-research contexts. 2) Through the 'slow' digital humanities methodology, which experiments with annotation strategies for explaining, interpreting, and critiquing synthesis patents and algorithms to deliver a web-based critical reader on synthesis techniques. 3) Through the theory, which addresses synthesis as a *cultural technique* and metaphor which precedes instantiation in media. For music, cultural techniques can enrich new materialist and affordance theories which position technologies as the *a priori* ground from which cultural practices flow (Geoghegan 2013).

This degree of conceptual and methodological ambition, combined with rich historicisation and developed from a set of contrasting case studies, distinguishes SYNCULTURE from other attempts to understand contemporary changes to our media environments through exclusively empirical means. The primary field the project will benefit is contemporary music studies; however, its individual work packages address the subfields of popular music (wp1, wp2), digital musicology (wp2), electroacoustic music (wp3), sound studies (all wps), and science & technology studies (wp4, wp5).

2) Introduction Music has been at the forefront of the public debate on synthetic media's cultural impacts. In April 2023, entertainment media were set alight with the case of *Heart on My Sleeve,* an anonymously-produced, original track that 'faked' a collaboration between rappers Drake and The Weeknd. Since then, Taylor Swift, Oasis, Beyoncé, The Beach Boys, and The Rolling Stones have all had their 'deepfake' moment. Arriving in early 2024, watermarking technologies began to limit the flow of these productions onto YouTube and TikTok (Deepmind 2024, Tiktok 2024), their roll-out spurred by pressure from prominent rights holders like Universal Music. Scholars have analysed how these arrangements mark a new stage in the history of musical authorship, as copyright law increasingly folds into contract law and regulation is delegated to private companies and algorithms (Tang 2022, Drott 2024). Yet the question of how to analyse these productions in terms of their non-economic *cultural value* has gone unaddressed.

An obstacle to a richer understanding of what I will henceforth call *musical synthetic media* (MSM) has been the morally-charged public conversation on the topic. Mirroring the debate on deepfakes in politics and the media (Huijstee et al 2021), concerns regarding personhood and the right to one's own likeness have dominated. While these concerns have their place, they nevertheless correspond to a naive realist understanding of media in which truth and falsehood are straightforwardly distinguishable qualities

that inhere in media objects independently of interpretation, and representations can be distinguished according to binary formulations of authentic and inauthentic, transparent and opaque (Ristovska 2022). For sound specifically, naive realism also inheres in the overwhelming emphasis on *voice* in academic and public debates on the ethics of MSM (Bendel 2019; Robertson 2020; Pejcha 2023; Parler 2024). Normatively defined as the sonic fingerprint of the person from whom it issued, voice in MSM discourse is tantamount to personhood, to the exclusion both of other, equally-clonable carriers of musical personality and 'truth'--like instrumental 'voice' (Lewis 1996)--and of those subjects who do not conform to normative vocal identities (cf Meizel 2020, Sterne 2021). For artistic uses of MSM, where complex formulations of truth, signification, subjectivity, and synthesis go far beyond binary formulations of authentic/fake, it is abundantly clear that extant discourse and policy is inadequate to the task of analysis, historicisation, and appreciation.

3) Beyond sampling culture, beyond AI Scholars in music, communications, and visual art have persisted in interpreting the spread of MSM through the frame of **sampling** and **remix culture**, and hence through cultural techniques of quotation, montage, and recontextualisation that saw their heyday in the 1980s and early 90s (Cover et al 2022; Meikle 2022; Gamble 2024, Danesi 2024). Although the utopianism that characterised early web-era 'remix' scholarship (Manovich 2007; Miller 2008; Lessig 2008) has been replaced by a more dialectical understanding of the digital informed by critical AI studies (algorithmic 'bias'; excessive energy consumption and resource extraction; deskilling and devaluation of labour; rights and privacy concerns–see Goodlad 2023; Rayley & Rhee 2023), the basic intellectual framework, inherited from nearly a century's worth of criticism on culture and authorship in the age of mechanical reproduction (Benjamin [1936] 1999, Barthes [1967] 2016, Foucault [1969] 1984), remains intact.

Among the varied appeals to sampling and remix, it is striking that no sound or music scholarship has explored the primary metaphor that synthetic media summons into being: the synthetic. Metaphorically, synthetic media surely follows synthetic biology, where synthesis denotes a life-imitating technology. As such, it can be used synonymously with 'artifice'--hence the connection to AI–and possibly too with 'sampling' as the paradigm for art that plays with original-copy relations. But a more generative reading is the notion of synthesis entailing either a gathering-together or amalgamation of discrete elements into a 'synoptic' view (Fazi 2024); or the creation of new combinatorial elements that exceed the sum of their parts, as in industrial chemistry (Barry 2005; Brock 2016). Notably, the latter understanding of synthesis is harder to assimilate to existing legal-political-philosophical frameworks of authorship–hence calls for new forms of copyright in the wake of generative AI (Josan 2024).

This failure is symptomatic of more longstanding scholarly neglect. As electronic music theorist Tara Rodgers (2010, 1) puts it, despite the ubiquity of sound synthesis in 'contemporary music and aural environments around the world (...) relatively little has been written on its cultural origins and meanings'. Important contributions address such topics as the West Coast / East Coast distinction manifest in the Buchla and Moog systems (Pinch and Trocco 2004); the commercial and cultural event of Wendy Carlos's *Switched On Bach* in 1968 (Glinsky 2022); the American Federation of Musicians' objections to the use of synthesiers in commercial studios (Pinch and Trocco 2004); the invention of a market for commercial synthesisers (Théberge 1997); and the return of modular synthesis (Bates 2020; Sterne and Stuhl 2023; Teboul et al 2024). Rodgers' (2020) *Pink Noises* sets a high standard, addressing how power and patriarchy are mobilised through the very constructions of metaphor in engineering language. Similarly, the PI (Haworth 2015) has analysed how uses of sound synthesis by glitch and noise musicians choreograph genealogical and genre-based associations that are better analysed through literary theory than affordance theory. Generally, if the analysis of sampling culture has been the domain of cultural musicology, popular music studies, and cultural studies, the analysis of synthesis as culture has catalysed disciplines that pay closer attention to engineering practices: science and technology studies, German media theory, actor-network theory. Analyses of synthesis informed by the interpretive humanities remain rare (Sterne & Rodgers 2011).

Some guidance can be taken from critical media studies, however. Seeking to replace the industry categories that pervade AI discourse with critical terminology, Benjamin Bratton's Antikythera has recently turned to metaphors of synthesis and synthetic intelligence, the latter defining 'intelligent systems that do and do not correspond to Humanism's traditions' and 'can complement and combine with human cognition, intuition, creativity, abstraction and discovery' (Antikythera 2022). For Antikythera, synthesis serves as an etic category to improve our understanding of AI. By contrast, SYNCULTURE treats synthesis as at once an emic and an etic concept: emic because it also circulates in industry discourse and etic because, in order to move beyond naive realism, our understanding of synthesis needs to be enriched via history and criticism.

4) Research Objectives (RO) 1 *Identify MSM's relevant cultural techniques* How does MSM reconfigure the boundary between the signal processing techniques of sampling and synthesis (WP4)? Which techniques matter, and at what scale should our analysis be trained, e.g. sampling or the individual relations of citation appropriation that issue from it? Should we extend our analysis to law and IP? **RO2** *Historicise MSM*

beyond the historical frame of remix culture, and beyond the presentism of AI (WP6). **RO3** *Innovate in the political and cultural analysis of MSM* to explain, represent, connect, and critique the mathematical formalisms of signal processing and synthesis as they operate in culture (WP6). **RO4** *Reconceptualise MSM* beyond the naive realism of fake / authentic in popular commentary (WP2), and beyond the language of standard / nonstandard that dominates modelling discourse (WP3). **RO5** *Intervene in the discourse for MSM* to build a richer lexical analysis of contemporary sonic media (WP2), informed by vernacular discourse about synthesis. **RO6** *Develop the theory of synthesis culture* to understand what fields 'synthesis' gains its rhetorical associations and legitimacy from (WP6), and how widely 'synthesis culture' can be understood.

5) Interdisciplinary methodologies, theoretical innovation: Because synthesis is primarily the domain of mathematicians and engineers, we need to innovate to find ways to bring its terse formalisms to wider understanding – this is before anything like critique can take place. Methodology is, then, a key dimension of SYNCULTURE, continuing the methodological innovation of the PI's prior work (Born and Haworth 2017a, 2017b; Haworth 2023). SYNCULTURE adopts a mixed methods approach integrating historical, ethnographic, practice-based, and digital methods. In the main, the method used is appropriate to the individual work package. However, for WP6 we will explicitly experiment with methods for chronicling, explaining, visualising, analysing, and critiquing synthesis methods. Together, this methodology will be termed the 'slow' digital humanities (SDH) – *slow* to take the emphasis off new technology and emphasise reflection, revaluation, dialogue and criticism. **SDH1) Historical methodologies** 1.1 Archival research: To deliver RO2, case files, inventor testimonies, technical papers, and correspondence at 15 archives will be consulted and scanned (inc AT&T and IEEE in the US, IET UK). Sound- and web-based archival sources will also be used, notably in WP2. 1.2 Interviews, oral history, observation, analysis of public commentary: To contextualise the written materials mentioned above, interviews with engineers, mathematicians, scientists, and musicians will be undertaken (RO2). **SDH2) Digital methods** 2.1) Natural language processing (NLP) will be applied to vernacular language about music and synthetic media, to help construct a knowledge base allowing for the annotation and analysis of new linguistic forms together with their conceptual and cultural underpinnings (RO4&5). 2.2) Topic modelling (TM) will be used to empirically track selected keywords across the entire corpus of texts scanned in 1.1., to help track and identify trends and assemble a systematic review of synthesis' history (RO2). **SDH3) Practice-research methods** 3.1(Re)implementation of understudied synthesis techniques Historical and understudied methods will be implemented to enable practical exploration and analysis (RO1,3). 3.2 Autoethnography will be used in tandem with 3.1, allowing reporting and analysis of technical, creative, and sensory experiments (RO3). **SDH4) Analysis, interpretation, and critique** 4.1 Experimental fora: Regular workshops among the team will serve as test-beds for novel analysis of synthesis in terms of mathematics, circuit designs, interfaces, business models, IP and commercial contracts, discourses, performance techniques, poetics (RO6). 4.2 Experimental annotation and visualisation**:** Together with SDH4.1, and building on Nakai (2021), Chun (2021), Crawford and Joler (2018), and Mackenzie's (2017) visualisation methods, we will experiment with methods for annotating and visualising key signal processing and synthesis methods (RO3, RO6).
Cultural techniques and beyond: Achieving RO6 will require accounting for synthesis's multiple lives as at once a body of musical techniques, a domain of engineering and mathematics research, and a realm of language and discourse. Turning attention to the operations that exist *prior* to their instantiation in media–for example, counting, weaving, interleaving–cultural techniques (Siegert 2013; Winthrop-Young 2013; Geoghegan 2013) will be used to conceptualise sampling and synthesis as 'operations or sequences of operations that historically and logically precede the media concepts generated by them' (Siegert, 2011: 15). Critical interpretive work on the poetics of audio-technical discourse (e.g. Sterne and Rodgers 2011) will be used to supplement cultural techniques' non-representational emphasis (Thrift 2008).

7) Project Design, Timeline, and Work Packages
Five self-contained but collectively synergistic work packages (WPs) are designed to cover different analytical domains of synthesis: musical practice across both art and popular styles (WP1, WP3); vernacular discourse about synthesis (WP2); synthesis's relation to representation and abstraction (WP3); engineering practice and implementation (WP4); and intellectual property and industry (WP5). To demonstrate openness to alternative findings in relation to RO1, WP4 explores filtering as a subdivision of synthesis. All five feed into the new theory of synthesis culture (WP6). Staffing: SYNCULTURE is a team-based project involving named researchers (two experienced researchers and one postdoc) whose expertise is necessary to successful delivery, and a further postdoc and PhD student who are still to be recruited. Additionally, a postdoctoral research software assistant (RSA) plus mentor will complete the team. Named researchers are: ER1 Dr Maria Perevedentseva (U Salford, WP2): popular music, music and the internet, digital methods; ER2 Dr Erik Nyström (City U, WP3): electroacoustic comp and theory, practice-research; PD1 Ezra Teboul, archivist, practice-research, audio electronics engineer. Overall timeline: Mths 0-6: Project setup; initial meetings of

core research team; Advisory Board conference; job advertisements for PhD1&PD2; ethical clearance for entire project via UoB. Mths 6-48: Empirical and creative work across WPs. Mths 48-60: writing, publication, pooling of findings into website, policy events, dissemination.

WP1: Analysing musical synthetic media (RO1, RO2, RO3, Haworth and PhD) **Aims:** This study will analyse and historicise the fast-developing field of deepfake pop as a 21st C species of synthesis in music. Across the case studies of 60's revivalism and hip-hop, it aims to 1) identify which precise mechanisms matter for amateur musicians working with copyrighted material in the twenty-first century, from rights pertaining to the dataset to watermarking on TikTok and YouTube; 2) determine what new skills, divisions of labour, and categories of music producer vocal deepfakes have precipitated, as fans have access to their favourite musicians' likenesses; 3) analyse the grassroots digital archiving strategies that have developed to stay ahead of the corporate platforms; 4) understand how fan-creators, named artists, and labels negotiate the boundary between cultural-value and clickbait in deepfake pop; and 5) ask whether, given fictional collaborations are frequently the object of aesthetic attention, the metaphor of 'synthesis' better describes the techné of deepfake pop than 'sampling'. A third historical case study addresses art music–notably the work of Charles Dodge–and whether vocal cloning shifts our understanding of the vocal synthesis's long history. **Method:** WP1 employs SHD1.1&1.2, and SDH3.1. In the latter case, the PI and PD1 will reconstruct the 1976 implementation of a linear predictive coding used by Charles Dodge: both to offer a closer analysis of the piece (cf Clarke & Manning 2020) and to better illuminate vocal cloning's history.

WP2: Aesthetics and discourse of synthetic media (RO4, RO5, Perevedentseva) **Aims:** WP2 will identify and analyse synthesis's vernacular discourse across different genre communities. It aims to understand 1) how musicians, listeners, and critics talk about and describe synthesised sound; 2) where this discourse happens, and how it can be analysed; 3) how these descriptions map to sounding gestures and characters; and 4) how generalisable these descriptions are across electronic music communities. Through this, WP2 will understand attitudes towards citation, reference, imitation, and novelty in synthetic media beyond the pejorative language of cloning and fakery that dominates popular commentary, and beyond the engineering language that often serves to cordon off synthesis as a specialist domain. **Method:** SDH2.1 will be used in tandem with concepts from critical discourse analysis and cognitive linguistics. The study will compile and analyse text corpora from online genre forums where synthesis is discussed (electroacoustic music; EDM; modular synthesis and hyperpop; organisations like Afrorack and Music Production for Women; and online communities for AI-generated music), to establish patterns of language use that encode ideas, imaginaries and assumptions about synthetic media. The results of these analyses will enable the creation of a richly annotated, open-access linguistic corpus to understand and interpret new and evolving aesthetic orientations to synthetic sound on the terms that musicians and creative technologists themselves set up. Additionally, we will build the findings into practical music settings to enhance the cultural responsiveness of LLM training, raise new questions in music cognition, or to improve virtual instrument design (Hayes et al 2022).

WP3: Theorising synthetic models beyond standard-nonstandard (RO1, RO4, RO5, Nyström) **Aims:** WP3 addresses theories of representation and modelling in synthetic media. In computer music theory, the capacity of synthesis to either imitate the world or produce something new is often described in terms of a 'standard' vs a 'nonstandard' approach to mathematical modelling: 'standard' meaning the implementation of an acoustic model (e.g. a guitar, room, perceptual function) and 'nonstandard' meaning an abstract or experimental algorithm (Holtzman 1978). In their concatenated translations, from sound to data to text and back, neural synthesis methods call for a new understanding of the relation between world, model, and synthesised sound, beyond the binary of real-abstract. This WP explores this, while also considering how a refashioning of this relationship impacts key tenets in electroacoustic composition and analysis (e.g. spectromorphology, Smalley 1997). **Method:** WP3 is a practice-based inquiry into the use of neural-synthesis methods in composition. Drawing on SDH3.1&3.2, the WP will entail the research, composition, and evaluation of new works, together with authoethnographic reportage on processes of construction, perception, and evaluation.

WP4: Filtering as cultural technique: from analog signal processing to synthetic media (RO1, RO2, RO3, Teboul) **Aims:** WP4 focuses on the role of filtering in synthetic media. Since Rosenblatt's foundational work on perceptrons (1958), filtering has connected machine learning, expert systems, and artificial intelligence, to a much longer arc of signal processing research. For some engineers, filtering even serves as sound's master-metaphor, to the extent that 'everything is a filter' (Mills 2022). But just how versatile and encompassing a cultural technique is filtering? How does attention to the cultural technique of filtering illuminate the relations between synthesis of the 20th century and synthetic media of the 21st? In shifting the focus from the worldbuilding activities of musicians and theorists (WP1-3) to those of engineers, WP4 asks:

can a theory of synthesis culture both perspectives?
Method: Using SDH1.1, 1.2, and 2.2, WP4 will map and analyse the growing hegemony of filtering in 20th C signal processing against the changing horizon of commercial needs and desires it responded to.

WP5: Synthetic media between authorship and inventorship (RO3, Haworth and PD2) **Aims:** WP5 will examine the evolving legal and corporate determinants of music synthesis methods and their impact on creative practice. Musicology of the past ten years has undergone a material turn, with thing theories, new materialisms, 'German' media theory, sociology of science, and green media analyses being mobilised to understand musical agency and musical ethics in ways that extend beyond the intentions and possessions of a romantic individual-creator (Bates 2012, Piekut 2014, Tresch & Dolan 2013, Rehding 2016, Devine 2019). While this work is welcome, it has displayed surprisingly little interest in the question of how a musical entity *becomes* a thing–as opposed to an idea, expression, or other musical construct. The sampling clearance system had a consequential effect on sampling culture (McLeod & DiCola 2020), but how should we understand the moral, ethical, and legal mediations of synthesis and their periodisation? What are the relevant mechanisms–patents, trademarks, copyrights, corporate secrets–that police novelty in synthesis design? How are they arbitrated? What do they protect or leave untouched? What 'folk' moral-ethical practices have creative practitioners developed in addition to, or in spite of, legal frameworks? **Method:** SDH1.1 and 1.2. will be used together with musical analysis and interviews with musicians.

WP6: **Towards synthesis culture** (RO6, all researchers) **Aims:** WP6 will trace the displacements, transformations, and bifurcations synthesis and its associated terms have undergone in their 200+ year history crossing fields, disciplines and practices. Through the methodologies described in SDH4, together with field trips and invited presentations, WP6 will provide a transdisciplinary, historical, and mixed-mode mapping of synthesis and its interfaces, patents, models, and techniques. Why has this term proven to be so fertile in terms of its disciplinary moorings, from philosophy, to music, to chemistry, to signal engineering, to finance? What political-economic conditions conspired to render synthesis one of the twentieth-century's key cybernetic concepts – and possibly an even more important one in the twenty-first? WP6 will be a critical etymology that takes as its object keywords normatively defined as 'technical' rather than 'cultural': synthesis, sampling, signal processing. As well as offering critical reflection, WP6 in dialogue with WPs2&3 aims to intervene in synthesis's discourse to re-theorise synthetic media beyond the pejorative. What metaphors, ideas, and imaginaries are in play when musicians and other cultural producers set about synthesizing worlds? If sampling implies an orientation to cultural objects that has been theorised as postmodern or digital-utopian, then what does a 'synthetic' or 'synthesizing' orientation imply?

4) Research Outputs and Dissemination one joint authored monograph (ja-m), two individual monographs (m#, WP1&4), an edited collection (ec), a dissertation (WP1b), five journal articles, a composition (WP3), a podcast series (WP6), an interactive website (iw, WP6), an open dataset (WP2), and a finding aid (WP4). m1 Transformative Fandoms (Haworth), will respond to the questions in RO1, drawing on WP1a and WP1c. m2 (Teboul&Haworth) will respond to RO1, drawing on the case studies in WP4&5. The ja-m, Electronic Music After Spectromorphology (Nyström, Perevedentseva, Haworth) will revisit analytical keynotes in electroacoustic music theory in light of SYNCULTURE. The ec, After Sampling Culture, will re-theorise remix for the 21st century. The Synthesis Handbook (iw, all members), will be an interactive open-access website offering an interpretive and historical take on signal processing and made to be integrated in teaching. Dissemination will include an international project conference, a Turing and Ada Lovelace Institute policy event series, and a Computer Music History Museum exhibition.

5) Risk Mitigation: Staffing: all named researchers have confirmed their participation in writing, and their WPs are designed with their expertise in mind. However, the topics (discourse, modelling etc) are designed to be broad enough to accommodate other staff were somebody to leave. Mitigating climate change: we will follow responsible practices to decarbonise conference travel (Klöwer et al 2020), including holding at least 50% of meetings online. Openness to alternative findings: although synthesis is the theme of the project, the analysis and understanding of contemporary media is posed as a question rather than a resolved concept. To demonstrate this openness, WP4 explores filtering as a related, contrasting cultural technique.
Contemporaneity: the historical aspects of most WPs (1,2,4,5, 6) mean that, even in the unlikely event that future technological or industrial changes prompt a rethink of the framing adopted in this proposal, contributions to our understanding of e.g. instrument design / inventorship; modeling will not be affected.

6) Advisory Board (with project-specific expertise in brackets): [redacted]

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