PARKS AND RECOMMENDATION:
SPATIAL IMAGINARIES IN ALGORITHMIC SYSTEMS

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Algorithmic recommendation systems are designed to aid users in their navigation of large catalogs of media, such as songs or movies. Among the developers of these systems, those catalogs are commonly referred to as constituting or occupying "spaces" — the "music space," for example, might be the set of all music available to stream on Spotify, organized such that similar songs are near each other. The production of this space occupies much of the time of engineers who work on these systems, drawing on a variety of mathematical and computational techniques. Although a numerically defined space may sound neutral or objective with regard to the objects located in it, this work of space-making requires effectively arbitrary choices that are shaped by subjective interpretations, which in turn shape the spaces thus produced. This paper reports on interpretations of the "music space" encountered during several years of ethnographic fieldwork conducted with academic and commercial developers of recommender systems for music in the US. In it, I argue that these interpretations play a significant part in developers' understandings of their work and its implications.

In particular, I describe a tendency toward pastoral metaphors in how engineers and others involved in the making of algorithmic recommenders explain their work. One indicative example: At a conference in 2012, then head of Google Music Tim Quirk suggested that digital streaming services had given rise to a new form of cultural infomediary, different from the DJs, record store clerks, and label A&R guys who had previously acted as influential "tastemakers" or "gatekeepers." Instead, the makers of digital music platforms were "park rangers" who tended to a vast musical landscape, maintaining paths for visitors, and making the musical space manageable. Quirk elaborated:

> Being a park ranger means our job isn't to tell visitors what's great and why. Our job is to get them from any given thing they like to a variety of other things they might. We may have our own favorite paths and being park rangers we probably even prefer the less crowded ones, but our job is to keep them all maintained so visitors to our park can choose their own adventure. They might not feel our hand on their backs as they wander, but it's there. It's just subtle. (Quirk 2012)

This pastoral imagery was echoed in the comments of a "data curator," whose job was to assess algorithmic outputs, and who described herself to me as a "data gardener." Related metaphors were scattered through daily conversation and in technical terms of art — algorithmic radio stations, for example, grow from "seeds."

I suggest that pastoral imagery provides a middle route through two extreme positions regarding the origins of the "music space" — that it is an objectively existing cultural order or that it is an interpretive invention of engineers. Arguments about the merits of digital streaming services often hinge on how these spaces are characterized: Critics suggest that the spaces recommender algorithms navigate are highly controlled walled gardens that pretend to be the "natural." Meanwhile, although one might imagine the space of databases and algorithms to be orderly, Quirk and many of the engineers I talked with saw the space of online music as an intrinsically unruly wilderness. Although pastoral metaphors may appear to work in the service of naturalizing music spaces that are in fact constructions, my informants wielded these metaphors ambivalently, using them instead to locate their work at the interface of the natural, cultural, and technical. To be a data gardener is to tend to algorithmic outputs that have been "bred" but are not wholly anticipated, using computational tools that can break or remain ready-to-hand, guided by cultural logics of desirability and aesthetic purpose. In short, where critics see the rigid stasis of artificiality, system builders see emergent, nature-like flux.

The technologies that mathematically generate musical spaces descend from spatializing techniques that originated in the social sciences (Shepard et al. 1972; Stefflre 1971; Bourdieu 1984; see Desrosières 2002). These techniques have been highly influential for quantitative researchers across disciplines, but hold an ambivalent status among contemporary qualitative researchers. By referring back to the history of the social sciences — especially the emergence of post-war formalism in the US — qualitative researchers can more adequately position ourselves relative to these systems. These spatial imaginaries also bring the work of constructing algorithmic systems into contact with critical theoretical work on space, place, and control (e.g. Bachelard 1964; De Certeau 1984; Deleuze 1992), which can orient our attention to recommender systems as *path-making* technologies, to playlists as styles of paths, and to different playlisting algorithms as different styles of path-making. As one young Brooklyn entrepreneur suggested to me: What if personal histories of music listening were paths through the music space, and recommendations could tell you what people further down your path were listening to? Understanding how these spaces are understood by those who produce and attempt to navigate them can help outside critics to make sense of *why* certain design decisions are made. Through connecting this material to theoretical work on space provides a new set of critical tools for interpreting these decisions. For example, Quirk's statement about "our hand on their backs," subtly guiding listeners through a park that appears wide open, recalls Deleuze's arguments about control societies, in which apparent freedom is modulated by obscured environmental control. As the spaces navigated by users of the internet are increasingly algorithmically produced and modulated, critics would do well to interpret and theorize them *as* spaces.

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