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Review Article

Music Streaming as a Mediated Process: Algorithms and Assets

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Nick Seaver, *Computing Taste: Algorithms and the Makers of Music Recommendation*. University of Chicago Press, 2022. xv + 203 pp. ISBN 9780226702261 (hard cover); 9780226822976 (paperback); 9780226822969 (digital).

Eric Drott, *Streaming Music, Streaming Capital*. Duke University Press, 2024. xi + 343 pp. ISBN 9781478020998 (hard cover); 9781478025740 (paperback); 9781478027874 (digital).

Online music streaming and the platforms that enable it are a relatively new phenomenon in music practice, at least when measured against the timescales of music history. They involve not only very specific and structurally decisive financial arrangements (multi-sided markets, financialization), but also depend deeply on technological affordances that did not exist in their current form less than a generation ago — most notably recommender systems. The two books at the centre of this review, *Computing Taste: Algorithms and the Makers of Music Recommendation* by Nick Seaver and *Streaming Music, Streaming Capital* by Eric Drott, together illuminate many non-obvious yet crucial structural conditions of contemporary music streaming as a networked, lived practice distributed across humans, technology, finance, and culture.

In recent decades, several strands of research that emphasize the relational, mediated, and processual nature of musical practice have gained increasing prominence, approaches that understand musical properties not as stable givens but as shifting relations among actors. This perspective is exemplified in the work of scholars such as Antoine Hennion, Georgina Born, and Christopher Small, with his influential notion of 'musicking'.[1] Any study of today's musical landscape concerned not only with the musical product itself (such as the recording or score), but also with the processes that unfold with and around it (creation, dissemination, recommendation, listening) will benefit from the deep and original perspectives that Seaver's and Drott's books offer for understanding music streaming in a holistic way. What emerges from reading the two studies together is an account not of streaming as a new channel for the

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[1] Antoine Hennion, 'Music and Mediation: Toward a New Sociology of Music', in *The Cultural Study of Music: A Critical Introduction*, ed. by Martin Clayton, Trevor Herbert, and Richard Middleton, 2nd edn (Routledge, 2012), pp. 249–60; Georgina Born, 'On Musical Mediation: Ontology, Technology and Creativity', *Twentieth-Century Music*, 2.1 (2005), pp. 7–36, doi:10.1017/S147857220500023X; Christopher Small, *Musicking: The Meanings of Performing and Listening* (University Press of New England, 1998).

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distribution of pre-existing musical entities, but of a socio-technical formation in which music is continuously redefined through the changing conditions of its circulation.

An Object That Resists Enquiry

One of the most striking characteristics of music streaming as an object of research is its opacity and corporate secrecy. Scholars who attempt to look behind the curtain of these companies routinely find their efforts to understand the inner workings of these services deflected in subtle or not-so-subtle ways.[2] This secrecy, which severely restricts academic access to analysable sources, poses a fundamental problem for any researcher seeking to produce a study or critique of the modes of existence of music streaming and recommendation.

Drott and Seaver take two different paths to puncture this secrecy and to arrive at an understanding of streaming that advances the discussion in novel ways; they employ different methodological strategies that organically derive from their respective disciplinary backgrounds. As an anthropologist, Seaver draws on the long tradition of the scholar being embedded in the milieu they study, learning about both the publicly acknowledged and the tacit assumptions of the field through personal immersion. Reflecting on this tradition, he reminds the reader that anthropologists have even successfully studied nuclear scientists, developing a method of communicating with their sources called 'polymorphous engagement' (p. 16). In comparison, mere corporate secrecy of a music start-up looks more manageable.

The second major inroad into the world of music recommendation for Seaver was learning the basic tenets of the technology. The irony of the companies' secrecy is that most of the technical knowledge about how the recommender systems are structured is actually public. Textbooks for computer science students exist where the make-up of a recommender system is presented in exquisite detail, from components that rely on explicit and implicit feedback from users to structures that utilize numerical representations of recordings and user preferences to generate recommendations, also taking into consideration the listening profiles of other users the system deems similar.[3] To be sure, for a humanities scholar it takes a certain courage to confront and learn to understand the computer science jargon that is a prerequisite for reading such a textbook. But it is not impossible, as Seaver the anthropologist demonstrates. In the end, this additional work has paid off handsomely, as it has enabled Seaver not only to understand the technical explanations of his interviewees, but also to ground his theory-rich humanities arguments in a clear grasp of the technical structure.

Drott approaches the problem of secrecy in a different — one might say opposite — way. Rather than zooming in and examining his object of study from within, his book zooms out, exposing the intricate and often fascinating ways in which music streaming services are entangled in a dense web of financial, legal, and societal relations. To understand his object of study, Drott likewise moves beyond the usual comfort zone of his home discipline, musicology, and engages an area of knowledge that can be as daunting for a musicologist (or anthropologist) as computer science: the world of finance and licensing agreements.

[2] Tiziano Bonini and Alessandro Gandini, 'The Field as a Black Box: Ethnographic Research in the Age of Platforms', *Social Media + Society*, 6.4 (2020), pp. 1–10, doi:10.1177/2056305120984477; Maria Eriksson and others, *Spotify Teardown: Inside the Black Box of Streaming Music* (The MIT Press, 2018).

[3] Charu C. Aggarwal, *Recommender Systems:* The Textbook (Springer, 2016).

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These two different paths through secrecy also align with the disciplinary backgrounds of the authors. Seaver works within a specific anthropological tradition that values a more neutral and analytically descriptive gaze, marked by his consistent refusal to position his analysis as an external corrective. For example, while he discusses the streaming services' similarities to (and differences from) slot machines and the behavioural addictions they may enable (p. 66), his emphasis lies on reconstructing how practitioners themselves conceptualize and justify their work. Drott, by contrast, writes from an openly articulated critical and political Marxist position within musicology, aiming to analyse and critique his object of research and also to consider how it might be actively transformed. Each book taken on its own already constitutes a substantial contribution to the scholarly understanding of music streaming. Both have justly attracted significant attention, as evidenced by the publication of numerous reviews across a wide range of disciplines. Together, they hold the potential to advance the understanding of music streaming in several mutually reinforcing ways.

Recommenders

Through his direct engagement with engineers working at music streaming companies, Seaver is able to bring to light two specific technological arrangements that have far-reaching implications for understanding the cultural effects of recommendation. In doing so, he makes clear that these effects are considerably more complex than their public image of straightforward homogenization and stereotyping. Seaver explains beautifully that recommendation based solely on similarity to a user's previous listening is in fact a vastly outdated paradigm in recommender system design. Drawing on his understanding of technology, he shows how, as early as 2012, research and industry practice were already shifting away from this model towards the use of 'captivation metrics' — such as time spent on the platform and user retention — as measures of recommendation success (pp. 55–62). This shift complicates the terrain of cultural critique directed at platforms, making it more difficult to argue that recommendation in itself is the cause of the domination of online streaming by large music companies and their commercial products, a point that connects to Drott's analysis of the services' legal and licensing agreements.

Another important point is that Seaver draws attention to the fact that 'the makers of music recommendation actively avoid using signals that they consider explicitly demographic as inputs' (p. 74). This, again, complicates humanities critique. It would be easy to condemn streaming services if they used the information one enters when registering (such as age or gender) to tailor recommendations based on stereotypical notions of musical taste within a demographic group, but this does not seem to be how they operate. From the companies' perspective, relying on simplistic stereotypes of musical taste within particular communities would constitute not only an ethical and political but also a business problem: such clichés would result in inefficient recommendation and ultimately the loss of the user base. Instead, complex abstract patterns of user–item interaction — notably, often removing any human-readable markers such as genre — now constitute the dominant paradigm of recommendation not only in music but in many other domains. The subtlety of Seaver's approach here lies in the recognition that even by removing explicitly demographic information, the creators of recommender engines cannot escape the latent influence of social structures on the behaviour of the users and the data traces they leave behind.

Seaver's study focuses primarily on a particular phase in the development of music streaming. His original field research took place between 2011 and 2015, almost a decade before his book,

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which is based on his 2015 dissertation, was published. Given that major streaming companies now have annual revenues in the tens of billions of dollars and are publicly traded — meaning their stock prices (and the private fortunes of their founders) depend directly on the information that reaches the public — it is plausible that the secrecy Seaver already encountered in the early 2010s has only intensified. His insider account is therefore likely to remain an essential resource for analysis for years to come. At the same time, the conditions that enabled such access were historically specific. Because both a large number of people and many companies are referred to in the book by pseudonyms, there is no easy way for subsequent research to expand on his analysis directly by reinterviewing the same people or studying the same companies further (in the event that the companies still exist, of course, which is not obvious in the fast-moving world of start-ups).[4] This anonymity, however, is of course integral to the ethnographic contract that made the study possible in the first place.

Markets

Drott introduces a different perspective than the cultural beliefs of engineers and the structures of the recommender engines they create: the financial and legal preconditions under which the streaming services operate. He shows how these arrangements do not merely make it possible for such companies to exist — often with significant financial losses sustained over many years — but also structure their goals and behaviour in a fundamental way. Drott introduces several key distinctions that render the financial landscape surrounding music streaming companies more intelligible (pp. 68–75). First of all, he explains how assets differ from commodities: whereas commodities are produced and sold in the present, assets are held with the speculative expectation that they will acquire more value in the future. He also traces how the inflation of asset prices, driven by specific political and economic transformations that he outlines, has in recent decades made the holding of assets more financially attractive than the production of commodities. Against this backdrop, his account offers a compelling explanation for the otherwise surprising surge of interest in music catalogues as objects of acquisition, despite the persistent image of commercial music as ephemeral and short-lived.

From these foundations flow Drott's incisive analyses of the mode of existence of music streaming companies (pp. 75–81). He explains how streaming platforms function as central nodes within a 'multisided market', mediating relationships between artists and rights holders, advertisers, investors, and listeners, or, as he puts it, 'leveraging off' one against the other. The collection of rents plays a structurally decisive role in this process. Rights holders, a small group Drott characterizes as an oligopoly, want to collect rents on their quasi-monopoly over music catalogues. Yet they require access to users. Streaming companies, another equally small group that Drott describes as being part of an oligopsony, exercise a quasi-monopoly over user access. They let rights holders access the users, but in turn collect their own rent for the use of the digital platforms they have built, a rent extracted for the very capacity to extract rent. This entire edifice is held together by the practice of offering users relatively cheap music subscriptions, often at a loss to the platform itself, in the hope that a future, monopoly-like concentration of users will one day enable the extraction of even higher rents. In the process, several crucial assets are created, of which music catalogues may not even be the most valuable. These include

[4] Where people are not pseudonymized, Seaver uses their full name; where they are given only a first name, this is a pseudonym. Similarly, some companies are given their real name, but those beginning with W are a false name.

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platform users together with the data that characterizes them, who can be rented out to advertisers, and not least the company itself, with its listeners habituated to or sometimes effectively locked into its services.

Seen against the backdrop of the scholarship mentioned above, which emphasizes the mediated and relational character of musical practice, Drott's incursion into the world of music's finance and licensing serves a crucial methodological role: it subtly but deeply shifts the focus from works to networks. While some strands of musicological analysis — and, as Drott notes, influential critical accounts such as Adorno's — presuppose a pure commodity logic, the 'assetization' of commercial musical practice radically shifts the incentives for nearly all actors on the production and distribution side of music, including musicians, rights holders, and platform owners. What cultural consequences this financial landslide has already produced, or may yet produce, remains to be studied in greater depth. It is tempting, however, to speculate that the widely discussed shift from album-oriented production and listening towards single tracks, most often organized in continuously updated and widely popular playlists, is closely tied to this dynamic. One might also seek here a possible answer to a puzzling question with regard to the strategy of streaming services: why do Spotify and comparable platforms not simply produce their own music, given their unparalleled insight into user preferences? The distinction between asset ownership and commodity production may offer at least part of an explanation.

Mediation

The four points briefly outlined above — captivation instead of similarity, user–item interaction instead of stereotyping, asset creation versus the production of commodities, and quasi-monopolistic rent extraction — are, of course, just a tiny curated selection from the enormous intellectual menu that the two books offer the reader. Each presents a virtuoso amalgam of broad theoretical grounding and detailed engagement with the specificities required to understand the dynamics of the actor-networks that structure contemporary professional musical practice, particularly in the popular music sector.

In Seaver's anthropological account, for example, the technical details of recommender systems are in fact subordinate to his analysis of the cultural milieu of programmers and computer science engineers working at music companies, which reveals their widespread belief in the fundamentally mathematical structure of music — a feature that, in their imagination, renders it especially amenable to algorithmic management (p. 97). Drott's cultural and financial examination of streaming platforms culminates in his critique of the outsourcing of social functions such as emotional regulation to prerecorded music that becomes necessary under economic stress, a development that fosters the spread of a predominantly functional approach to music (pp. 193–254).

What clearly unites both books at a deep methodological level, however, is their shared interest in what can be described as mediation, the active role of the various human and non-human actors who constitute musical life by transforming, not just transmitting, musical meaning and effect. Despite their disciplinary differences, Seaver and Drott converge in their treatment of mediation as constitutive rather than secondary. Neither author is primarily concerned with musical works as self-sufficient aesthetic objects; instead, both attend to the infrastructures, practices, and systems through which music becomes available, intelligible, and valuable within today's platformized environments. In this respect, their work resonates with Born's theorization of musical mediation as multi-layered and generative: technological,

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institutional, economic, and social processes do not simply surround musical practice but participate in shaping its very ontology. One might also say that both authors contribute to a better understanding of what might be called the processes of musical practice, as opposed to the outputs or products of those processes, as well as of the entire networks that constitute musical life, rather than the musical objects that may visibly crystallize the effects of such network dynamics but are not in themselves the only active nodes.[5]

In Seaver's ethnography, the central role of mediation becomes visible in the epistemic and technical practices of recommender system engineers. Recommendation algorithms do not merely sort an already stable corpus of musical works; they operationalize specific assumptions about what music is and how it can be known. Music appears in this context as a signal or pattern, a bundle of extractable features susceptible to comparison and correlation. The widespread belief among engineers in music's fundamentally mathematical structure does not remain a private conviction; it is sedimented in data models and similarity metrics that in turn structure listening possibilities. The categories through which users encounter music are thus not neutral descriptors but the outcome of specific music ontologies and the computational abstractions that are based on them.

Drott's analysis foregrounds a different but no less crucial layer of mediation. He elucidates the financial and infrastructural architectures within which streaming platforms operate. Multisided markets, licensing agreements, venture capital investment, and the logic of assetization do not merely determine how revenues are distributed after the fact; they shape the conditions under which music is produced, circulated, and valued in the first place. The platform's need to demonstrate growth, attract subscribers, and satisfy investors exerts pressure on catalogue management, playlist strategies, and the organization of musical labour. Metrics such as stream counts function not simply as descriptive indicators but as operational criteria that feed back into decision-making processes lying at the root of musical production. In this sense, financialization is not external to musical practice: it reorganizes its temporalities, its incentives, and its horizons of expectation.

Together, the two accounts suggest that streaming platforms are better understood as environments that actively organize musical practice, rather than as neutral conduits of preexisting works. Here again Born's insistence on the layered character of mediation proves useful: aesthetic experience, institutional organization, and technical design appear here not as separable domains but as mutually conditioning dimensions of a single formation. What streaming intensifies is merely the visibility and measurability of these entanglements.

A further implication of this shared orientation lies in the distribution of agency that both authors implicitly trace. In their respective analyses, musical outcomes cannot be attributed solely to composers, performers, listeners, or even engineers. Non-human actors such as datasets, recommendation models, licensing contracts, royalty formulas, and investor expectations also obviously exert force within the networks the two authors describe. Agency is dispersed across heterogeneous actors, whose interactions produce what appears as musical practice. By foregrounding such constellations, Seaver's and Drott's books provide particularly apt and valuable sources for an analytical approach in which music is understood not as a stable object but as a dynamic process — technical, economic, institutional, cultural, and so forth — that continuously brings musical life into being. In doing so, their work speaks directly to

[5] On the processes of musical practice, see Nikita Braguinski, 'Using Music Streaming Data for Research: A Relational Approach', *Popular Music*, 44.4 (2025), pp. 420–26, doi:10.1017/S0261143025101220.

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ongoing musicological concerns. Musicology has long attended to the institutions and social formations within which music circulates; what Seaver and Drott make visible is the contemporary configuration of such mediations. Their work therefore extends familiar questions into domains that now exert unprecedented influence over musical production and listening.

Emerging Questions

Drott's and Seaver's books on streaming are part of an entire wave of publications on this topic that continues to grow in size. Early on, the tone of this conversation was set by their own articles (some subsequently reworked into chapters in their monographs), as well as by contributions emphasizing how music streaming and recommendation unsettle fundamental aspects of musical practice and reception, raising questions that reach into philosophical domains such as individuality.[6] Large government-commissioned overviews of both technical and cultural commentary on music streaming and its effects have been created that detect deep divides and mutual incomprehension between these two sides of academia.[7] There are now books that criticize music streaming's business logic and cultural impact based on more than a hundred interviews, as well as books about online platforms that have the words 'resistance' and 'fight' in their titles.[8] An edited collection has been published that provides local perspectives on the global political economy of music streaming.[9] Given the field's current breadth, it is unsurprising — and very productive — that differences of interpretation have emerged. One recent book, for example, has challenged the critique of streaming as shallow, functional background listening, arguing instead that functional modes of engagement have always coexisted with concentrated reception (which may itself be historically and socially exceptional).[10]

One of the major shifts that has gained considerable traction since the publication of both books is the expanded role of AI technologies. The recommender engines of streaming services have long relied on such technologies, and both authors rightly analyse them as central nodes within the networks of contemporary musical practice. But there has also been a second, parallel technical development that has positioned AI technologies as transformative actors not in the distribution of music but in its production. After several years of impressive yet largely closed experiments in computer science laboratories with the direct generation of musical audio (as opposed to the mere production of notation), the field entered the public sphere with the

[6] Robert Prey, 'Nothing Personal: Algorithmic Individuation on Music Streaming Platforms', *Media, Culture & Society*, 40.7 (2018), pp. 1086–1100, doi:10.1177/0163443717745147.

[7] David Hesmondhalgh and others, 'The Impact of Algorithmically Driven Recommendation Systems on Music Consumption and Production — A Literature Review', 2023 <https://www.gov.uk/government/publications/research-into-the-impact-of-streaming-services-algorithms-on-music-consumption/the-impact-of-algorithmically-driven-recommendation-systems-on-music-consumption-and-production-a-literature-review> [accessed 1 March 2023].

[8] Liz Pelly, *Mood Machine: The Rise of Spotify and the Costs of the Perfect Playlist* (Atria Books, 2025); Tiziano Bonini and Emiliano Treré, *Algorithms of Resistance: The Everyday Fight against Platform Power* (The MIT Press, 2024).

[9] *Music Streaming around the World*, ed. by David Hesmondhalgh (University of California Press, 2025).

[10] Tiziano Bonini and Paolo Magaudda, Platformed! How Streaming, Algorithms and Artificial Intelligence Are Shaping Music Cultures (Springer Nature Switzerland, 2024), doi:10.1007/978-3-031-43965-0.

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emergence, around 2023, of widely accessible, text-controlled audio-generation services.[11] And there is a second, connected, area: the technical structure of recommender engines and of the data they process does not simply unite music from different genres or epochs. Music shares space — both in the literal sense of screen space and in the technical sense of a latent space used to represent recordings numerically — with forms of audio that are decidedly not music: audiobooks and podcasts, whale vocalizations, hairdryer noise, and ocean waves. Some recordings on streaming services are not even meant to be listened to by people, at least not consciously: there is music and sound for sleep (which both authors do speak about), as well as playlists to be used to calm pets or even perform religious functions — notably also allowing the absence of humans during the act of streaming. All of this is subjected to the same logic of recommendation and is integrated into the same interface. It would be fascinating if Drott and Seaver were to turn their attention to these developments in future, analysing how they tie in with their insights into engineer culture, the logic of recommendation systems, the contradiction between asset-holding and production, and the automation of emotional care.

[11] At the time of writing, some of the most widely known services of this kind include Suno.com, Udio.com, and Boomy.com. In early 2026, Google pushed the generation of audio even further into public attention by visibly embedding its music-generation model into the chat interface of the Gemini service; Joël Yawili and Myriam Hamed Torres, 'A New Way to Express Yourself: Gemini Can Now Create Music', Google: The Keyword, 18 February 2026 <https://blog.google/innovation-and-ai/products/gemini-app/lyria-3/> [accessed 3 March 2026].

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