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The Field as a Black Box: Ethnographic Research in the Age of Platforms

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Abstract

This article aims to provide a detailed rendering of the struggles we experienced while undertaking ethnographic research for the study of music curators working at online music streaming platforms. Based on the field notes generated during a multi-sited ethnography, the article will critically discuss the "black boxing" strategies employed by these platforms in order to protect themselves from public scrutiny, and how media scholars can counteract in order to (partially) circumvent the restrictions posed by them. In light of this discussion, we propose five tactics that we argue can be employed in order to perform ethnographic research in the age of platforms. We conclude with a reflection on what we can learn from "failures in the field" and why it is important to advance ethnographic studies of the new places of cultural production.

Keywords

ethnography, digital methods, black box, field research, online music streaming platforms, platformization of music curation

Introduction

This is the account of a "failure," and what we have learned from this "failure." The "failure" in question is a multi-sited ethnography (Marcus, 1995) aimed at studying companies that produce music streaming platforms, such as Apple Music, Spotify, Deezer, Google Play Music, Amazon Music, Tidal, and Shazam, which did not go as planned.

The initial project originated from the perspective of production studies (Mayer et al., 2009), normally used to explore the production logic within traditional cultural industries (the press, television, radio, cinema, publishing, video games, music industries). In our case, we tried to extend this perspective to the tech companies that are changing those same industries through their online platforms, a change that Nieborg and Poell (2018) call the "platformization of culture."

What we know today about the functioning of cultural industries, we owe in large part to the work done in the past by the social scientists who adopted ethnography as a method for investigating those industries "from within," highlighting their production cultures. Media studies have a strong record in "unpacking" black boxes like newsrooms. The technological, cultural, and social filters that determine the editorial choices made in the newsrooms of newspapers and television channels have long been investigated and "unpacked" by classical studies in media research (Altheide, 1976; Born, 2011; Gans, 1979; Gitlin, 1980; Schlesinger, 1978; Tuchman,

1978). Media sociologists of the past century revealed the process of "reality construction" happening within newsrooms. Schlesinger examined "assembling reality," while Gitlin discussed "making and unmaking reality," and Tuchman explicitly spoke about the construction of reality. The supposed objectivity of the American press was the first value to be called into question (Tuchman, 1972). Gans (1979) wrote down "the unwritten rules" of journalism (p. xxiv). An analysis of productive routines and daily production practices was necessary to explain how social infrastructures, institutions, and their interests were transferred to the news produced—or, else, how, we may say, the "human algorithm" of the selection of news by the legacy media of the time reflected these biases within its "code."

As Paterson and Domingo (2008) remind us, "without those early ethnographic investigations of news production, our understandings of journalism would be limited to what little we are able to glean from the observation of news content" (p. 2). As Schlesinger (1980) explained, the ethnographic method of news production research makes available

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"basic information about the working ideologies and practices of cultural producers" (p. 363, quoted in Paterson & Domingo, 2008, p. 2).

Our hypothesis was that, by going "into the field" of the new gatekeepers of the music industry and observing their practices through ethnographic methods, we could reach similar conclusions and shed new light on the dynamics of the interaction between the algorithmic infrastructures that support platforms and those who work for them (Bonini & Gandini, 2019).

But the defeat we are talking about is precisely the fact that we were able to enter only partially into the field of research that we had imagined: that is, we were not allowed to set foot inside the offices of Spotify, Google, Apple, or Deezer, to closely observe the music curators at work and participate in their meetings. These companies proved to be impermeable to any request from independent researchers, as Eriksson et al. (2019) already showed for Spotify. After the first phase of disappointment, we realized that it was partly possible to get around "the fortress," and we put into practice research tactics to try to open some cracks to leak data and information. We realized that the way they rejected us is itself a very significant source of data, which tells us a lot about the opacity of the power exercised by these platforms over our consumption of cultural artifacts. As Seaver (2017) reminded us, "challenges to access—hidden meetings, reluctant interlocutors, non-disclosure agreements—are part of the field, not simply barriers around it" (p. 7). These challenges are already data, and scientific research plays a political role in trying to reduce this opacity, or at least make it public.

Researching the platforms and the role of algorithms in the cultural consumption choices of millions of people in what Freelon (2018) called the "post-API age" is a very difficult endeavor. Perhaps it has never been as difficult as it is today:

> When companies can restrict or eliminate API access at any time, for any reason, and without any recourse, computational researchers and students need to seriously consider how to proceed. We find ourselves in a situation where heavy investment in teaching and learning platform-specific methods can be rendered useless overnight: this is what I mean by "the post-API age." (Freelon, 2018, p. 665)

In this age, the processes of selecting, filtering, and distributing cultural content have never been as opaque. Not only do researchers have restricted access to APIs (Bruns, 2019), but they also have restricted or very often no access to the production sites of the platforms.

Our fieldwork made us realize that it is the whole field, constituted of the network of online music companies, and not their proprietary algorithms, to be *black boxed*. We discovered that the tech companies re-shaping the music industry are the real black boxes that need to be unpacked. We contend that what we have learned from this fieldwork may be useful to scholars in the broader interdisciplinary field of platform studies (Bogost & Montfort, 2009; Plantin et al., 2018) and media production studies.

This article aims to provide the reader with a detailed rendering of our field experience in the study of the music curators of online music streaming platforms. It is, in a way, a companion article to the one produced from that experience (Bonini & Gandini, 2019), where we did not have enough space to reflect extensively on our fieldwork. If the previous article mostly focused on the *product* of our ethnography, this article focuses on the *process* that led to that product, and why this process could be meaningful for the entire field of what could be called "online platform production" ethnography.

We will critically reflect on the "black boxing" strategies employed by online platforms in order to protect themselves from public scrutiny, and on how media scholars can counteract in order to circumvent (partially) the restrictions posed by them. In light of this discussion, we propose five tactics that we argue can be employed in order to perform ethnographic research in the age of platforms. We conclude by showing how we can continue to perform ethnographic research, what we can learn from "failures in the field," and why it is so important to advance ethnographic studies of the new places of cultural production.

Media Production Ethnography in the Age of Platforms: A Literature Review

All cultural industries have at times resisted being investigated. The brilliant ethnography of the BBC written by Born (2011) was the result of long and hard negotiations with heads of BBC departments: "Access to the BBC was very difficult [. . .] In the case of the BBC, it was like a military campaign. I made openings on several fronts" (Born quoted in Szczepanik, 2013, p. 113). Born later realized she had been granted access because one angry head of the Drama department wanted her to chronicle the marketization of his department. On the contrary, Gans (1979) recounts that he had no difficulty obtaining permission to observe journalists while they were doing their work. He attributes this good fortune to the willingness of the journalists of the time to publicly show their commitment to the profession, which in the 1960s, with the rise of New Journalism and the civil rights movement, was changing rapidly and moving toward greater transparency and accountability. Ethnographic work is always grounded in a specific time and space, and situated among different economic and political interests, which may temporarily favor or make access to the field more complex or impossible.

Today we know a great deal about the functioning of traditional cultural industries. Many processes have been unveiled, and many researchers continue to cross the threshold of editorial offices at newspapers and television channels around the world every day (Thomsen, 2018). Production studies

scholars have been entering the production sites of cultural industries for years (Murphy, 2011). Of course, it is not easy to get in, but the "black boxes" of the places that produce newspapers, radio, TV, and cinema continue to be opened every day with the tools of ethnographic investigation. However, in our case, almost no one (except for Seaver, 2013, 2017, 2018, and some online newspapers) has yet managed to set foot inside these places. As Coleman (2010) recounts, "Few scholars attempted to conduct ethnographic research primarily in terms of emergent digital technologies" (p. 488), and when it happened, most of the time they were focused on the use/reception of digital technologies (Baym, 2000; Miller & Slater, 2000; Postill, 2008). Just as the ethnography of media production is a trend that has been more slowly established within media studies than the ethnography of media reception and consumption (Moores, 1993) and audience ethnography (LaPastina, 2005; Murphy, 1999), the ethnographies of the production sites of digital platforms are also slowly emerging, lagging behind the ethnographies of the reception of digital media. The ethnography of digital media production first spread in the field of journalism studies: many recent works have extended the tradition of focusing on routines and decision-making practices in the newsrooms of online news media (Paterson & Domingo, 2008; Tandoc, 2014). Petre's (2015) ethnography of the "traffic factories" and Christin's (2020) ethnography of French and US based online newsrooms looked at the production, interpretation, and uses of audience metrics on news sites as a way to explore how new forms of audience metrification interact with the sense of professional authority that marked the history of legacy journalism.

But if digital journalism scholars have increasingly adopted an ethnographic approach, the same cannot be said for studies on other cultural industries affected by new media. With rare exceptions, we are still waiting for a new wave of ethnographic scholarship on "platform production" at Netflix, Apple, Spotify, Uber, and Airbnb. One of these exceptions, as said, is represented by Nick Seaver (2012, 2013, 2017, 2018), who has performed several years of multi-sited ethnographic fieldwork with the software developers of algorithmic music recommendation systems in the United States, and has proposed an "anthropology of algorithms" (2018) in which algorithms are seen as cultural artifacts. Seaver (2017) claims that an ethnography of algorithms is good "for apprehending the everyday practices that constitute them" (p. 6). As recounted by McDonough (2018), Seaver

> conducts his fieldwork in the cafeterias of tech companies, in hotel conference rooms, and through social media exchanges. To collect data, he reached out online, at conferences, and through academic labs, eventually landing ninety interviews and even an internship at a tech company.

In addition to the emerging global trend of investigating and framing platforms as technological infrastructures, we should also focus on the role of humans in shaping these infrastructures. As Cohn (2019) stated,

> I would argue for the development of critical analysis that highlights the complexities and incongruities present at every step of an algorithmic apparatus [. . .]. Too often, humans are distanced or forgotten in this process, which makes the algorithms they create appear far more like black boxes than they actually are. (p. 92)

Following Seaver (2013, 2017, 2018) and Bucher (2016), we argue that there is a need to investigate the social and cultural constructs that lie behind algorithmic infrastructures.

As Seaver (2013) noted, "algorithmic systems are not standalone little boxes, but massive, networked ones with hundreds of hands reaching into them, tweaking and tuning, swapping out parts and experimenting with new arrangements" (p. 10).

To understand how this network of black boxes works, we decided to look into the work of online music streaming platforms curators; what follows is the account of what we have learned.

Among the Curators of Online Music Streaming Platforms

We started this fieldwork as a continuation of our previous ethnographic experiences in the places of radio and music production (Bonini, 2016; Bonini & Gandini, 2015, 2016; Gandini, 2016). In this case, we wanted to approach the curators of the online music streaming platforms as other scholars had accessed the newsrooms of newspapers and television news channels in the past. First, we wanted to spend time inside these production spaces, in order to identify the key figures and understand their production routines, and then generate the first research questions at a later stage. Building on previous sociological work on the roles of gatekeeping in the traditional cultural industries, we were convinced that it was first necessary to understand the dense network of actors, both human and non-human (the algorithms), that participate in the production of a given music streaming platform, in order to understand how these platforms influence music consumption. As Herbert Gans already understood, the construction of news has to be located "not in the journalist, the publisher, or in the gatekeeping editor, but in the process by which all parts, routines and arrangements of the organization are engaged for the creation of news" (Reese, 2009, p. 280). Correspondingly, the construction of the musical offer mediated through a streaming platform is not the result of the gatekeeping activity of a single figure, be it a music curator, a software developer, or an algorithm, but the consequence of an entanglement that involves different levels of gatekeeping and different kinds of actors. As Seaver (2017) learned in his fieldwork with US-based developers of algorithmic music recommender systems, "after setting out to study

engineers specifically, I realized that many more actors shaped the systems these companies built" (p. 3).

Our goal was to gain access to the field of digital music companies in order to study this entanglement, but initiating this fieldwork proved extremely difficult. Our first idea was to visit the headquarters of the most important music streaming companies (Apple, Spotify, Google, Amazon) for a period of participant observation and to interview those who work on the production of the playlists and the maintenance of the algorithms, with the aim of investigating the local ecology of their activities.

In fact, access to the headquarters of these companies through a formal request was always formally denied. Even setting up a meeting with one of their workers was extremely problematic: we had to exchange 16 emails in order to finally convince one software developer from Spotify to chat with us. People at Deezer first replied enthusiastically, then disappeared and never answered further emails. Operators at Google Play Music did not reply at all.

After months of unsuccessful emails, with replies that came weeks apart or not at all, we realized that all the companies we had contacted were behaving the same way: they were avoiding us. What they were hiding from public scrutiny were not just their proprietary algorithms, those inaccessible infrastructures of code, or "black boxes" as now commonly understood (Pasquale, 2015), but their whole production structure, the "unwritten rules" of their platform production. We were facing the inaccessibility of an entire industry. The whole "field" of the music streaming industry was a black box (Bonini & Gandini, 2019), with smaller black boxes (the individual companies) hidden inside, like matryoshkas. What's more, each of these boxes had set up a number of "black-boxing strategies" to keep us at a distance.

Black-Boxing Strategies: First Deflect, Then Silence

The first strategy put into practice by all the companies contacted was what we may call "deflection." The term comes from physics and defines as an event whereby an object collides and bounces against a plane surface. For this effort, we define deflection as a strategy to bounce action or responsibility away from oneself and toward another person, time, or place. For example, when we wrote an email to one of our contacts at Deezer, whom we had met at a music festival a few months earlier, his response was as follows:

> Thanks for getting in touch. I have copied our Global Pop Editor, Thomas Jefferson,[1] to this mail by way of an introduction as he would be more than happy to talk to you about how we do things differently here at Deezer. Thom is the perfect person to help you with your enquiry as he is the expert here.

Initially, our contact was very helpful and forwarded (or "deflected") our request to the person he thought was the

right one for our questions. We wrote to this person five times in a row, always keeping our Deezer contact in copy, and neither of them ever answered. First, we were deflected to another address and then we were "silenced."

We found these two strategies—deflection and then silence—in all the companies we contacted. The first time we contacted a Head of Content at Spotify, we got the following answer: "Traveling and in Stockholm for meetings 12–19 . . . please allow extra response time." We wrote to him five more times and never received a reply, not even an automatic reply.

When we tried to contact Spotify's press office (PR manager), they told us that it would be very difficult to interview one of the curators, but that they would forward our request to Stockholm (again, they first deflected our request toward another unknown person). After 3 weeks of silence, we wrote again, asking why they were silent, and the PR manager replied as follows:

> I would like to inform you that we have immediately taken care of your request and have reported it to our contact persons in the company. We had not yet replied as we are waiting for feedback on this. We'll let you know as soon as we get a response. I remain available.

Again, another example of deflection: they took more time. We waited another week, we wrote twice more, and in the end, we received this reply: "Here I am, with news. After a check with my boss I have to inform you that unfortunately at the moment it is not possible to organize an interview with the editorial team of Spotify." The pattern *first deflect, then silence* was repeated cyclically, in all our direct contacts with companies. Their strategies worked, because in the end we got tired of bouncing from one office to another and then being left unanswered. Trying to get in through the front door of the company proved to be an ineffective strategy in this case.

Tactics for Unpacking the Black Boxes

The repeated rejections we received from these companies forced us to look for other solutions. How can we gain access not so much to the codes of the algorithm, but to the cultural and economic "codes" that govern the "black box" of the industry itself?

Faced with the black-boxing strategies applied by all online music streaming platforms, what we had to do was act tactically. Looking at our fieldwork from afar, we felt like two besiegers outside a castle, observing their objective with binoculars and trying to evaluate the thickness and height of the walls in front of them. Viewed from a distance, the difference between the forces in the field was considerable: through the datafication of listening (Prey, 2016), the music streaming companies have accrued an unprecedented amount of knowledge (=data+information,

Kitchin, 2014) regarding their listeners, while listeners and researchers know nothing about them and the way they select/filter music. The asymmetry of knowledge and power between music gatekeepers and the rest of the society has never been so great. Faced with such an asymmetry, one can only act tactically, as De Certeau (1984) reminded us. The setting of strategy, notes de Certeau, is always the purview of power. Strategy presumes control. In contrast to strategy, de Certeau characterizes tactics as the purview of the non-powerful. He understands tactics not as a subset of strategy, but as an adaptation to the environment, which has been created by the strategies of the powerful. Therefore, we decided to embrace ethnography as a tactical tool to open a crack in the wall.

As we prepared to strike back and began to reflect on ethnographic practice as a tactical tool, we discovered that another scholar had already adopted this position: Seaver (2017) had just written "Algorithms as culture: some tactics for the ethnography of algorithmic systems" and proposed some tactics for "making algorithms ethnographically tractable" (p. 6).

The first tactic Seaver suggested is to scavenge, which means gathering information from the most disparate places: "I learned from off-the-record chats with engineers about industry scuttlebutt, triangulated with press releases and the social media updates of my interlocutors" (Seaver, 2017, p. 7).

Besides, as Seaver reminds us, algorithms are not the only obscure objects ethnographers have tried to study. Hugh Gusterson (1996, 2004, quoted in Seaver, 2017, p. 6) has studied the culture of nuclear weapons scientists—an extraordinarily secretive group. Unable to access their workplaces, Gusterson (1997) developed an ethnographic method he called "polymorphous engagement": this meant "interacting with informants across a number of dispersed sites, not just in local communities, and sometimes in virtual form; and it mean[t] collecting data eclectically from a disparate array of sources in many different ways" (p. 116, quoted in Seaver, 2017, p. 6).

The second tactic that Seaver suggested is to treat interviews as fieldwork, framing them not only as artificial situations created by researchers, but also as a form of cultural action.

Seaver's (2017) third tactic is "parse corporate heteroglossia" (p. 8), which is to very seriously analyze both the language of the documents produced by the corporations and the public statements of its members, within which one can often come across contradictions and revelations.

The fourth has to do with the ability to detect ambivalences and contradictions in the speech of respondents, which Seaver (2017) calls "beware irony" (p. 9).

Therefore, we tried to take advantage of the stories about the difficulty of access to the field of cultural industries told by Herbert Gans (1979) and Georgina Born (2011), as well as the tactics proposed by Seaver, and developed our own set of tactics: (1) rely on personal connections, (2) multi-sited

ethnography, (3) focus on ex-workers, (4) be undercover, and (5) digital methods for ethnography (Caliandro, 2018).

The first and second tactics, taken together, are very similar to the scavenging ethnographer tactics suggested by Seaver, or to the "polymorphous engagement" proposed by Gusterson. These are the ones we have applied the most and that have given us the best results.

In many cases, interviewees were recruited through trusted "brokers" who facilitated a connection between them and us; many ultimately accepted to participate in our research only *because* contact with us came through personal connections. As Hannerz (2002) already noted, access to the field is increasingly dependent on the entanglement between researchers and "the people in our fields" (p. 58): he met one of his first informants for his ethnography of foreign correspondents because he was the brother-in-law of the daughter of one of his colleagues. Even Gans (1979) admitted that his first informants had been journalists introduced to him by "a friend from college days" (p. 76). For us, it worked the same way: eventually, access to the field occurred through the mobilization of our personal social networks. We posted on our Facebook pages if someone, among our friends, knew someone working at one of the online music streaming platforms. We met our first informant from Spotify because this person had done a Master's program with the brother of one of the authors' wife. We made another contact through a friend who had a friend who moved to London and had found a job as a curator at Google Play Music. The contact with Shazam came from a neighbor of one of the authors who was close to someone who worked there. Our former students were very important, too: one of them, for whom one of us had written a recommendation letter for an application to a Master's program in music management in London years before, connected us with a professor of this program, who turned out to be a key figure in the London music industry. These first informants, reached through personal contacts, then connected us with other informants they knew who were located in different cities, from New York and London to Gothenburg and Berlin. Our ethnography began to resemble a multi-sited ethnography, in the sense intended by Hannerz (2003):

> Interacting with informants across a number of dispersed sites, but also doing field work by telephone and email, collecting data eclectically in many different ways from a disparate array of sources, attending carefully to popular culture, and reading newspapers and official documents. (p. 212)

Furthermore, we found the precious few journalistic reportages on this subject to be fundamental to our work. These appeared in newspapers such as *The Guardian* (Dredge, 2016), *The Wall Street Journal* (Shah, 2017), *BuzzFeed* (Allen, 2017; Ugwu, 2016), and *The Verge* (Popper, 2015; Tiffany, 2017) and performed work similar to that of the ethnographer, shadowing many music curators for several days

and recording conversations with them in their workplaces. As a result, we generated an eclectic array of data through interviews, shadowing, participant observation, reading music industry news, and informal talks, which partially covered the void generated by the rejection of our request to the companies.

To contact music editors willing to talk to us, in addition to relying on our personal networks, we tried to do research on LinkedIn, going to look for those whose curriculum said they had worked for one of these companies. We tried to contact the former workers of these companies, but only one of the profiles contacted answered us and was available to be interviewed.

The other tactic we explored, but did not put into practice, was to do undercover ethnography (O'Reilly, 2008). This approach was ruled out because we didn't have a suitable professional background to be hired in these companies and were too old for an internship.

Finally, we turned to Digital Methods (Rogers, 2013), and particularly to what Caliandro (2018) describes as "digital methods for ethnography." Digital Methods offer a powerful toolkit for using digital media not just as an object of study, but as a source for methods (Rogers, 2009, 2013). Inspired by this approach, Caliandro (2018) exhorts to make use of Digital Methods to complement and empower the ethnographer who seeks to study social formations deployed on online social environments. Following this suggestion, we made use of Digital Methods as an aid to our ethnographic exploration, following the principle of the "user as a device" (Caliandro, 2018, pp. 567–570). Inspired by Marres (2012), the "user as a device" approach assumes that "the user becomes an actor who, in some sense, collaborates with the ethnographer in his or her project of research" (Caliandro, 2018, p. 567). In practice, this consisted in collecting Twitter data for 32 music curators whose names we obtained first by browsing existing popular press articles on the topic, and subsequently by browsing the lists of users these actors follow on Twitter. To begin with, we adopted an "observational" approach, which consisted in tracing the activity of these accounts every day, for 3 months, from January to March 2018, observing the tweets they posted and the exchanges they engaged in with their followers, other musicians, and operators of the music industry. This allowed us to note, for instance, that several artists turned to Twitter to "implore," so to speak, some of the most well-known curators to be included on their playlist. Soon after, using an ad hoc tool, we collected the list of the followers of these 32 curators, and mapped the network of followers of these users based on their respective connections. This allowed us to create a network visualization, which we have rendered in Figure 1.

The network is made of a total of 65,536 users. This network is visualized on the basis of in-degree centrality, which renders existing connections among users according to incoming ties. The size of the aggregations around each single curator and the thickness of the edges renders the volume of exchanges they undertake with their followers. However, if we focus on the measure of betweenness centrality, which accounts for the number of times a node lies on the shortest path between other nodes, meaning that a high betweenness centrality value indicates a user holds authority over, or controls collaboration between, disparate clusters in a network, we can see the extent to which these curators are able to intercept information flows in this network. Based on betweenness centrality values (Table 1), we can note that 16 of the 25 curators in our dataset emerge as the most influential users.

This analysis suggests that, on one hand, the music curators we mapped in our work hold a significant "tastemaking" role as opinion leaders for their followers on Twitter; on the other, it indicates the existence of an implicit hierarchy of *platform gatekeepers* (Bonini & Gandini, 2019) that can be visualized using digital methods, and that conversations on Twitter are seemingly able to render. This is an example of how digital methods can empower ethnographic research in its attempt to "circumvent the black box" (Bucher, 2016).

Conclusion: Ethnographic Research in the Age of Platforms

Since it is increasingly difficult to apply computational research methods to online platforms (Bruns, 2019; Walker et al., 2019), ethnographic methods are becoming more useful than ever. While computational research is highly dependent on the degree of access to data decided by the platforms, "platform ethnography" is dependent on the degree of access to the field established by the platforms; however, as we have seen, different tactics exist to overcome the limits of this access. Computational research can also exceed the limits imposed by the platform, but most of the times, this means violating the terms of service (ToS) decided by the platform, with potential legal consequences for the researcher. In any case, the two methods are not in competition, but each, with their own limits and advantages, can provide different points of view, and both are useful for a better understanding of the processes of the platformization of culture and society.

Ethnography can help us better understand not only how technology fits into people's everyday lives (ethnography of reception/consumption of technology) but also how digital platforms are being assembled and reassembled every day, contributing to the understanding of the different logics and production routines underlying different platforms (think of the differences between the Western Instagram and the Chinese TikTok, or the Western Spotify and the Chinese QQ Music). Ramon Lobato (2019) gave us an excellent account of the evolution of Netflix from its foundation to the present day, and of its ability to adapt to different cultural contexts, but an ethnography of Netflix newsrooms could explain more deeply what lies behind the geography of Netflix distribution.

Ethnographic research allows us to understand the nuances between different platforms and reconstruct their different production cultures. Just as Ganti (2014) showed us
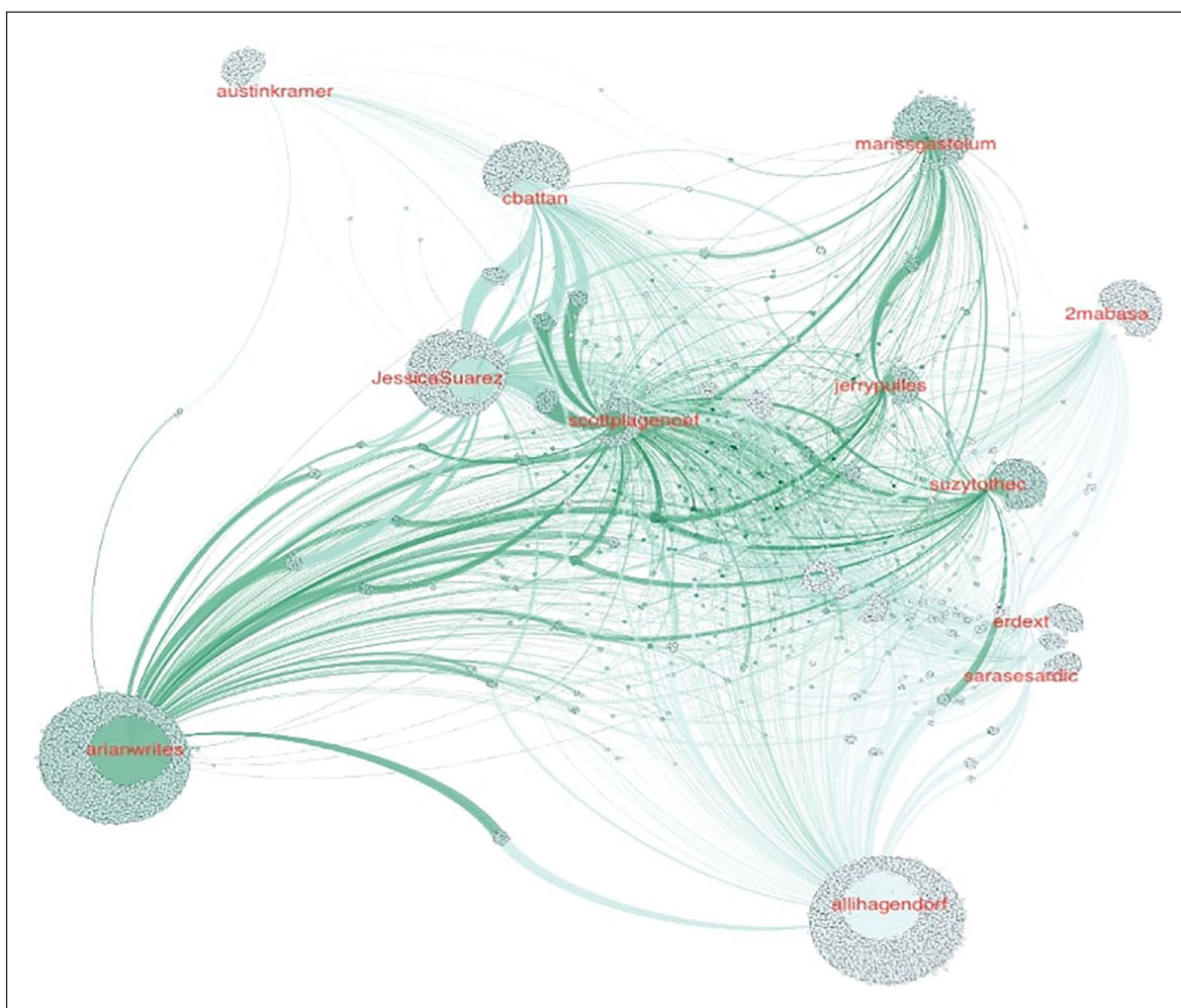
Figure 1. Twitter followers' network of platform music curators (platform gatekeepers) based on in-degree centrality (average degree=1,102).

Table 1. Betweenness centrality values, Twitter followers' network—music curators.[a]

Music curator's name	Professional role and platform	Twitter @account	Betweenness-centrality
Scott Plagenhoef	Head of programming and editorial at Apple Music	scottplagenhoef	164,598.1667
Arjan Writes	Head of Pop at Apple Music	arjanwrites	136,299.5333
Jessica Suarez	Editorial for americas at Google Play Music/You Tube	JessicaSuarez	119,253.2833
Allison Hagendorf	Global Head of Rock at Spotify	Allihagendorf	75,564.58333
Dexter Batson	Music curator for alternative music at Spotify	Erdext	70,166.83333
Carrie Battan	Editor at Google Play Music	Cbattan	39,086.28333
Marissa Gastelum	Latin Music programmer at Apple Music	MarissGastelum	35,993.08333
Suzy Cole	Global head of Metal and Rock at Apple Music	Suzytothec	22,312.96667
Nick Holmsten	Global Head Editorial at Spotify	Nickmanic	18,928
Sara Sesardic	Music curator at Spotify	Sarasesardic	13,851.5
Jerry Pulles	Latin Music Programmer at Apple Music	JerryPulles	9,077.583333
Austin Kramer	Editor of Electronic music at Spotify	Austinkramer	8,582.5
Peter Asbill	Music curator at Google Play Music	Peterasbill	5,228.75
Doug Ford	Head of Editorial at Spotify	Dougford	3,009.583333
Jamie Connor	Editor of indie music at Apple Music	Jmeconnor	2,102.066667
Brad Hayword	Music curator at Google Play Music	Brad4rdHay	1,820.283333

[a]The professional roles and the online companies the music curators worked for were collected by the observation of the information they disclosed on their Twitter Bios between January and March 2018. Since 2018, some of them may have changed their role or may work for another company.

that the production culture of Hollywood is different from that of Bollywood and Caitlin Petre (2015) showed us that the rising culture of data has been incorporated in different forms in the newsrooms of the *New York Times* and Gawker, in the same way, an ethnography of music streaming platforms or one of urban mobility platforms can reveal the differences between Spotify and Apple Music, Uber and Lyft.

What doing ethnography in the age of platforms ultimately reveals is that there is no single black box. Within the large field of research (in our case, the online music streaming industry) that we have defined as a black box, the researcher meets as many other black boxes as there are companies and corporate departments that make up that field. We are faced with a field resembling a set of Russian dolls: each box contains another smaller box, and we need to unpack all of them, one by one, as in a videogame. In this process of unlocking the different boxes encountered during the research, we will discover that each box has its own peculiarities, and how it distinguishes from the others.

The benefits of ethnographic research in the field of platform studies are the same as ever: it helps to generate a huge amount of very rich firsthand data; the researcher can directly witness actions, routines, and definitions of technology and can (not easily, not always) get insider points of view. In the same way, the weaknesses are also the same: observation is time-consuming, actors often feel disturbed by the presence of the researcher, and access to the field can be very problematic or almost impossible.

The tactics we have employed in our research, if observed closely, are not at all innovative: doing ethnographic research in the age of platforms does not mean inventing new techniques or a new form of ethnography. Instead, it does mean being able to adapt traditional ethnographic methods to the research context, to the "harshness" of the field, and embracing the different ethnographic weapons that have been refined over time by the practice of the ethnographers who preceded us. Perhaps the only novelty suggested here is, following Caliandro (2018), to turn Digital Methods into an ethnographic device and a support for ethnographic research, of which we showed a practical application.

Any ethnographic research on the production sites of online platforms will have to face the same problems of "access to the field," but the five tactics we have described here represent a rich toolbox for starting to look inside these black boxes. Depending on the context and its degree of permeability, each researcher can use the five tactics described here in different combinations, or experiment with others. Ethnography is a very flexible research tool that can be adapted to different contexts. A company may be able to keep the code of its recommendation algorithm secret, but it can never prevent a researcher from talking to a human who works, or has worked, within that company, or with someone else who works for them as a freelancer. Preventing researchers from talking directly with employees, as we have seen, certainly makes ethnographic research much more difficult,

but it is not enough to "protect" the company from independent research. If you can't get inside the fortress, you can always wait for someone to leave it, to intercept them, or, as Eriksson et al. (2019) did, you can get inside the fortress by introducing under-covered bots, pretend to be an intern, or start shadowing platform workers on Twitter.

Sooner or later, ethnographic research will find a crack in the platform fortress; some data are already leaking out, and it is only a matter of time before we find the key to the lock.

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Note

1. Names have been changed to guarantee anonymity.

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