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CHAPTER

# Artificial Intelligence and Phenomenological Ethnography

Ritwik Banerji

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## Abstract

While phenomenological ethnography is primarily concerned with the structure of an individual subject's experience of the sociocultural world, the contents of that experience itself remain a vital concern and problem for phenomenological ethnography given the several problems any ethnographer faces in trying to access what their subjects experience. This chapter describes an experimental methodology in which the ethnographer uses an artificially intelligent, improvising, musical social interactant to address this problem by staging encounters between performers active in free improvisation and these nonhuman virtual systems. Results of this method illustrate its efficacy as a novel means of understanding human social interaction as a distinct form of culture as experience.

**Keywords:** improvisation, artificial intelligence, human-computer interaction, ethnographic field methods, elicitation

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How closely can an ethnographer understand their research subject's lived experience as it unfolds? What might allow an ethnographer to apprehend that lived experience in the same manner as their research subject and at the same time as this subject?

Various phenomenological approaches to ethnographic fieldwork have established the importance of striving to understand a given sociocultural sphere or phenomenon from a subject's first-person standpoint (Jackson 1996b; Maso 2001; Desjarlais and Throop 2011). By focusing on how the world appears, sounds, and feels for subjects, such approaches challenge the tendency toward generalization and abstraction of much scholarship on sociocultural phenomena (Jackson 1996a). This work repeatedly reveals how multiple subjects can experience the putatively "same" action or social formation in divergent ways and invites explanations of diverse characterizations of apparently similar experiences. Phenomenological ethnography has also illustrated how a subject's reality often differs from a so-called "objective" account of the same sociocultural sphere and raises the question of why such differences emerge.

As vital these approaches have been, there are major limits to what a researcher can fathom about the way that being in a certain sociocultural environment appears, sounds, or feels for its participants. No matter how sensitively or empathetically ethnographers pursue their fieldwork, distance remains. While they may be able to observe the outer traces of a subject's internal consciousness as manifested in speech and bodily comportment, ethnographers will neither be able to experience the same environment in the same way that another subject does, nor will they be able to fully grasp what a subject reports about their experience. Whether for phenomenologists in philosophy (Husserl [1931] 1960, 1989; Levinas [1991] 1998), anthropology (Desjarlais 2003; Linger 2010; Desjarlais and Throop 2011), or ethnomusicology (Berger 1999) or for philosophers of mind in the analytic tradition (Nagel 1974; Dennett 1991), the possibility of knowing another's experience as they do and at the time that they have that experience is limited. For ethnography, this means that, at best, researchers and their interlocutors can only achieve a "partial sharing" of their experiences (Berger 1999, 16). An ethnographer's account can be very "near" their interlocutor's experience (Geertz 1983, 57), but is not that experience itself.

This basic problem in the ethnographic study of first-person experience has prompted a variety of experiments with field research techniques, including the use of electronic and digital media as a means of eliciting a subject's commentary on what they undergo in everyday social events. These fieldwork practices benefit not only those interested in an experiential account of subjects' encounters with the world but the practice of ethnographic fieldwork more widely. By no means, however, have possibilities for new field techniques been exhausted. In particular, experiments with media as a tool for elicitation are yet to fully explore the use of artificial intelligence (AI), a media form uniquely suited to reproduce the experience of human sociality itself, even if only partially. This is rather striking given that Hubert Dreyfus used a series of critiques of AI research and development (1972, 1992, 2007) as empirical examples for illustrating the validity of several claims about the constitution of human experience developed in the twentieth-century phenomenological tradition in philosophy.

The efficacy of AI as a means of doing phenomenological ethnography is most evident in a field technique I have practiced over several years, in which I have staged encounters between humanlike, AI-driven virtual social interactants and human beings. Such encounters radically expand the possibility of accessing participants' lived experiences. As I illustrate in what follows, a meeting between AI and social actors elicits a human participant's commentary on their experience of being with others in a given sociocultural sphere in the course of face-to-face, real-time interaction. This mode of fieldwork enables a far closer account of a subjects' lived experience of a given moment than has been possible through previous phenomenologically oriented ethnographic experiments by allowing subjects to comment on their experience more or less as it takes place.

While this method enables a researcher to gain a more intimate understanding of the subject's experience as it unfolds, key elements of the subject's conscious encounter with the world will, of course, still remain inaccessible. All the same, these encounters greatly augment the possibility of understanding what an ethnographic subject experiences, and yet this method has hardly been put to work. As more and more cultural practices are re-embodied in artificial life and other algorithmic, interactive modes of representation and performance, the development of such methods for ethnographic fieldwork will have all the more purchase and utility. To illustrate this point, this chapter describes my use of AI as a tool for the ethnographic examination of a subject's first-person experience. In what follows, I describe an experimental ethnographic methodology in which I have designed several humanlike AI performers of free improvisation and subjected these to the critique of human improvisers in Berlin, Chicago, and San Francisco. As I illustrate below, such encounters enable musical practitioners to comment on their experiences of this form of music as a social practice nearly as they happen and do so with a level of directness and candor that is not possible through other forms of ethnographic fieldwork.

## The Significance of the Present Contents of an Individual's Lived Experience

A subject's account of a particular moment of their lived experience is neither the sole focus of phenomenological ethnography, nor is phenomenological ethnography necessarily impossible if a researcher cannot completely understand every detail of what their research participants experience.[1] Phenomenology deals with *structures* of experience, such as subject-object relations, the body-world relation, or the relations among the phases of lived time. Hence a first-person account is just one point in a constellation of empirical and theoretical considerations in phenomenology.[2] Sometimes referred to as "internalism" (see Zahavi 2004), a focus on the internal flow of thoughts, feelings, and physical sensations in a subject's mind and body often gives short shrift to the pivotal role of embodied action in the makeup of lived experiences. Though the body is typically a constituting element of how a subject apprehends the world, a subject's consciousness often barely registers the state of the body (Merleau-Ponty [1945] 2002; Polanyi [1966] 2009). Much like the body, a subject may also be similarly unaware of the discourses and ideologies that shape their first-person experience of the world (see Berger 1999, 251–297). Thus, focusing on first-person perspectives may lead the researcher to greatly overlook what gives rise to what a subject experiences.

Naturally, a subject's experience of a given phenomenon (such as improvisation) typically takes shape over the course of numerous moments rather than just one instant. More often than not, no single moment really constitutes the essence of what a subject experiences of various cultural formations or routine social activities. Indeed, it is a basic tenet of Husserlian phenomenology that a subject experiences a single instant of objective time as a fusion of various past and future moments (see Husserl [1928] 1966). Nevertheless, a subject's experience of a particular moment of action remains an important element of phenomenological ethnography. For a more thorough account of the structures of experience, researchers must strive to improve their ability to access the *contents* of these experiences, even if it is difficult or ultimately infeasible. Among many possible applications, a better understanding of their subjects' experience at a specific moment will enable a researcher to have a more holistic consideration of how the events of that moment motivate subsequent behaviors. Moreover, if a particular object for an ethnographic subject is composed of an aggregate of their experience during a series of present nows, then understanding what the subject undergoes at those moments is useful for giving an account of the structures of experience, as well as how those structures vary from one point in time to another.

## Ethnographic Approaches to Accessing Lived Experience

The Sisyphean task of grasping a subject's lived experience at a given moment has prompted ethnographers of music to explore several methodological solutions.[3] Given the relatively basic problems of using interviews as a means of understanding specific moments of a subject's experience (see H. S. Becker and Geer 1957),[4] these have mostly taken the form of incremental elaborations upon the general framework of participant observation. For example, experiments with "feedback methods" (Stone and Stone 1981; Stone-MacDonald and Stone 2013) as well as the interface between phenomenology and cognitive science (J. Becker 2009) also offer small but significant solutions to the basic issue of accessing the subject's experience in the course of fieldwork. Overall, however, none of the methods succeed in enabling researchers to know and feel a sociocultural environment or phenomenon in the same way as their ethnographic subjects, nor do researchers pretend that they do. Broadly speaking, two axes of distance frustrate an ethnographer's ability to fathom a subject's lived experience: person (*"I am not you"*) and time (*"this now is not the previous one"*).

## Participant Observation and Its Limits

Participant observation in its various forms offers a means of achieving greater proximity to the subject's experience. By taking part in the same actions as their subjects, researchers are able to partially reconstruct what those subjects might experience in the course of similar moments, actions, or situations. For example, Friedson's (1996) study of music and dance in the healing rituals of the Tumbuka of Malawi examines the conditions of bodily action and sensory attunement that afford his interlocutors a culturally specific form of altered consciousness—trance—integral to local practices of medico-therapeutic care. Without asserting that his own participation in music and dance produces the same states of being as his interlocutors, Friedson details how the intensity of bodily movement within a forceful sonic environment of percussion enables his interlocutors to experience the physiological healing effects they describe.

His participation as an apprentice dancer and musician reveals several of the central paradoxes of participant observation as a means of conducting phenomenological ethnography. Even as his participation is driven by his desire to understand his Tumbuka interlocutors' reported experiences of healing and altered consciousness, it highlights the fact that it preserves the gulf between his experience and theirs, as Friedson readily notes. The stakes and goals of his participation are rather distinct from his interlocutors' since his participation serves primarily as a means of data collection for the purpose of writing about his experiences later on as a researcher of cultural practice. Friedson's Tumbuka interloctors, on the other hand, participate in these events for fundamentally different purposes. Similarly, his participation is largely temporary while the Tumbuka engage in these practices for a duration closer to a lifetime. This means he—or any other ethnographer who is not themselves a lifelong participant of the community they study—is largely liberated from the consequences and realities of a life in the social realm he studies. No matter how well integrated an ethnographer is in a community, they always occupy a position which is socially separated from that of their subjects (Bourdieu 1977, 1).[5] The divergence between what an ethnographer and their subjects experience also stems from any basic differences in their personal and social identities. Experience is not just rooted in a general fact of embodiment but rather in having a particular body of one's own as well as all the social worlds within which that body and being have traveled (Merleau-Ponty [1945] 2002, 475). Hence each individual's way of parsing phenomena that are objectively "the same" is at least minimally distinct from any other individual's.

Whatever form of participation one assumes in ethnographic work (i.e., as performer, dancer, listener, recording engineer, etc.), it can often allow one to understand what subjects experience far more readily than what one would learn from merely talking with them. Nevertheless, a researcher and subject experience the "same" moments within the habitual actions of a given social milieu rather differently. On this point, Rice's (1995) reflections on learning the *gaida*, a traditional Bulgarian bagpipe, are illustrative. As Rice notes, the instrument is less "taught" in a formal student-teacher sense, but rather learned through a combination of gradually more complicated practical use and self study. Rice himself went beyond these traditional methods by recording gaida performances and playing them back at slow speeds. In this sense, self study enables researchers to acquaint themselves with the many moments that are integral to the experience of their ethnographic interlocutors. All the same, a researcher's passage through these moments is incommensurate with that of their subjects.[6]

## Feedback Techniques

Not all phenomenological approaches to ethnography involve experiments in field methodology; rather, they typically constitute shifts in how one understands the nature and experience of fieldwork. What the ethnographer does in the field often remains more or less the same, while phenomenological thinking informs their conceptualization of research objectives and their analysis of ethnographic data. Feedback techniques (Stone and Stone 1981; Stone-MacDonald and Stone 2013), however, are a distinct mode of engagement and offer a salient approach to understanding what subjects experience. Here, the researcher reviews one or more fixed-media representations (e.g., field notes, photographs, recordings) in conversation with participants in order to elicit their commentary on various moments of action.[7] For example, Harris Berger's ethnography of popular music in northeastern Ohio uses this method as a way of understanding the subject's experience of certain moments of performance by listening to field recordings with the subject (Berger 1999, 174–241). This method is an effective means of allowing the researcher to gain a better understanding of what a social actor undergoes from their first-person standpoint. As the ethnographer and the research participant review specific moments of the fixed media object collected in fieldwork, the subject is often able to give a detailed description of elements of their experience that might not have been so easy to elicit: where was their attention directed? What went through their mind? What were they doing with their body? How did it feel? Indeed, Berger's dialogs with musicians in the context of feedback interviews readily reveal their purchase.[8]

Alongside its virtues, Berger recognizes the shortcomings of this method. He notes that feedback interviews can be "tedious" and "exhausting" for participants (Berger 1999, 174). As suggested by other theorists of practice (Bourdieu 1977; Rice 1995; Polanyi [1966] 2009), fluent, highly skilled practitioners are often quite unaware of precisely what they are doing or attending to at various points in a performance.[9] While this might seem to suggest a simple lack of skill or proficiency, it is often the result of an exceptional degree of expertise (S. E. Dreyfus and Dreyfus 1980; Brinner 1995). As soon as they acquire basic fluency in various elements of practice, these recede in a subject's conscious awareness of action. This liberation of cognitive resources enables them to focus on more complex elements of practice, but even so, much of what takes place may still not be a point of conscious awareness for the practitioner.

Rather than simply recovering a past moment of lived experience, the feedback interview actually creates new experiences for both fieldworker and ethnographic subject, even if these experiences concern the past (Stone and Stone 1981; Berger 1999, 186). While the feedback interview certainly allows a researcher to understand more clearly what a subject experiences during moments of practice, it becomes difficult to know which moment of experience is really being examined in the process of the interview: is it a moment in the past being reflected upon or a moment in the present feedback interview?

Post-hoc analysis of an experience at a specific moment in the recorded past has the power to break the flow of time, allowing a subject to share their moment-to-moment experience with the researcher. But does this moment of analytical reflection after the fact yield an accurate understanding of what the subject experienced at the moment in question? Quite understandably, Berger's description of his use of the feedback interview is imbued with an anxiety about the ways in which it risks distorting the subject's understanding of their own experience and, therefore, the researcher's ability to accurately comprehend what the subject really saw, heard, felt, or even did at certain moments.

Given these various problems, methodological and analytical experiments are well warranted in phenomenological ethnography, and they underscore the importance of continuing to find ways of accessing what an individual experiences at specific points in time. All the same, the incompleteness of this access is continually confirmed, and two basic gulfs of experiential understanding between researcher and subject endure: time and person. Participant observation brings a researcher closer to understanding specific moments of action, but the basic existential differences between ethnographer and subject perdure.

Likewise, feedback interviews may allow a researcher to understand an individual's highly personal, subjective experiential flux, but given that the feedback interview takes place after the fact, the gap of time, memory, and reflection all contribute to preserving an essential distance between a subject's experience and what a researcher will really ever understand of that experience.

## Encountering Technological Re-Embodiments of Human Musical Experience

If another individual's experience is never fully accessible, are there field techniques that would enable the researcher to gain a slightly clearer understanding of what another individual undergoes?

A possible, partial solution to this problem is found in the encounter between artificially-intelligent virtual social agents and the human beings whose practices these systems are built to re-embody.[10] It is widely recognized (see H. L. Dreyfus 1972, among many others) that such technologies are constructed with the goal of duplicating the *cognitive capabilities* of human beings. By contrast, it is far less widely recognized how the design of these systems is fundamentally oriented towards creating the *experience* of interacting with one or more members of the human species.[11] Crucially, while AI practitioners often present their work as if it embodies supposedly universal human traits, many scholars have criticized the heavily biased, partial, and particular nature of how humanness is algorithmically reproduced in these systems (Edwards 1997; Lewis 2000; Forsythe 2001; Suchman 2006). When a designer creates a system that might behave like "a" human being, that designer always has a very particular conception of what that "human" is, how that human behaves, and ultimately what the experience of interacting with another human being should feel like. Hence these human-like technologies must always be understood as depictions of culturally specific experiences of human social practice, not the "universal" human being that designers typically imagine they are copying.

As such, human encounters with artificial social agents offer numerous possibilities for examining the structure of distinct forms of human sociality and how these structures vary across cultural milieux. Though this mode of research is virtually unexplored in the humanities and social sciences, it has become an essential research practice in the field of human-computer interaction. In order to improve the design of such systems, researchers subject them to the critique of the people who are most likely to interact with those systems, often by collecting feedback on how the system's actions fit with the goals and habits of the target population. But beyond the purpose of refining design, a small contingent of theorists have noted that the encounter between a human being and a human-like technology can and should be applied to the study of human sociocultural practice more generally (Dourish 2006; MacDorman and Ishiguro 2006). One such purpose would be the pursuit of a greater understanding of what the ethnographic subject experiences during various moments of their participation in a given cultural practice in order to expand the methodological possibilities of phenomenological ethnography.[12]

In some ways, the encounter between an artificial social interactant and a human being resembles the basic structure of a feedback interview. In both, the conversation between ethnographer and subject focuses on a mediated artifact in order to elicit an experiential account of the event rendered by the medium. This broad resemblance aside, feedback interviews and AI-human interactions differ significantly; while the former rely on fixed media, the latter involve a media artifact which actively responds to the human subject that critiques it. Like fixed media, the design of an artificial social interactant is a method of depicting the nature of a given social practice. Unlike fixed media, however, an artificial social interactant does far more than simply depict a practice. By engaging with such media, a research subject is not merely a viewer or listener but is, rather, a partner in interaction. Further, the medium is not a static object; it actively performs the role of a human actor in the course of social interaction.

Here, a research subject does not simply comment on their experience of a past event but instead engages in an interaction. In an encounter with another human, a subject would likely refrain from halting the progress of an event to share the minutiae of their experiential state. In contrast, the encounter with an artificial social interactant enables the human subject to comment on what they experience almost as soon as they experience it.[13] Of course, their commentary on this experience is not to be equated with the experience itself; nevertheless, their utterances and expressions in this context may be the closest that one can come to accessing and understanding the flow of their first-person orientation to the world in the event that just occurred.

## Maxine and the Routine Sociality of Improvisers

Designing humanlike virtual social agents and staging encounters between them and their human counterparts has been an integral element of my work as both an artist and ethnographer. This element of my methodological repertoire has continually illustrated its distinct efficacy as a means of examining a subject's experience of human sociality. Similar in concept to George Lewis's Voyager system (1993, 1999), but distinct in design, Maxine (Banerji 2012, 2014, 2016)[14] is a virtual performer of free improvisation and the primary system I have used to experiment with this approach to ethnographic fieldwork.[15] Drawing on my experiences as an improvising saxophonist, an observer of performers in concert, a keen listener of recordings of this practice, and numerous conversations with performers over several years, I designed Maxine to be a virtual improviser that spontaneously composes and performs music while adjusting its performative trajectory in response to the sonic actions of fellow players in its midst. Through a concatenation of microphones, cables, audio interface, algorithms of my own design, and a loudspeaker, Maxine is built to perform the culturally specific form of sociomusical interactivity characteristic of free improvisation.

As is the case for any artificial social interactant (or any other cultural representation, for that matter), there is no reason to assume that human practitioners will find that these systems amount to an adequate portrayal of their social or musical practices of real-time human interaction. That is, it is usually a given that people depicted by a scholar will dispute their depiction or that practitioners of a certain activity will take issue with how an engineer has rendered these actions in a system's construction. The human tendency to dispute such representations or portrayals revealed itself in my fieldwork only shortly after a first complete version of Maxine was developed in 2009, when I began arranging a variety of occasions for fellow participants in Chicago's free improvisation scene to "meet" and play with the system.

Initially, the purpose of private meetings was to allow improvisers time to get to know the system as a player—just as they would with a human musician—but also to collect their feedback on how the system compared to a human improviser.[16] As soon as I began conducting these meetings, it quickly became obvious that they could serve a far broader purpose than the merely utilitarian goal of gathering critical assessments of the system in order to develop new objectives and strategies for subsequent design. Critiquing the system became an occasion for improvisers to talk about their experience of sonic interaction with other players and to do so with a degree of frankness that was uncommon in their face-to-face interactions with other players. Commenting on the system's resemblance to or difference from human musicians enabled improvisers to narrate their experience of co-presence and interaction with other performers with a level of detail that is rarely afforded by their typical modes of sociality.

In our discussions, a great deal of what improvisers had to say about their experience of playing with Maxine was negative. This is a significant departure from the polite social veneer that improvisers typically presented to me in other modes of ethnographic engagement. The performers I have worked with over the course of my ethnographic fieldwork in various scenes showed a marked, consistent tendency to mask their

distaste for other performers or particular approaches to free improvisation with a variety of platitudes or deferrals of opinion. Clearly, improvisers have a lot more to say about each other's playing than they tend to openly enunciate in routine social situations.

When the musicians did make negative commentary about Maxine, including the occasional vulgar or incendiary remark, it was largely unsolicited. When asking improvisers to talk about their experience of playing with the system, I made an effort to avoid any verbal or affective display of my own aesthetic appraisal of what I was hearing. Like many designers, I want to offer participants an opportunity to express their evaluation of Maxine without feeling pressure to agree with my own assessment. As an improviser who has spent a great deal of time working with the system, both as its developer and as its principal collaborator in public performance, I am, of course, biased in my opinion of the system as a "musician." I have been frustrated by working with this system, but I have also been delighted; both sentiments similarly apply to what I have heard in improvised interactions between human performers and Maxine. While others are playing with Maxine, I often hide my face as I listen, usually by turning my head away from the other performer, just as a judge might hide their reaction to a disturbing (or underwhelming) image from a crime scene, so as to not bias the jury. After playing a piece with the system, I try not to let performers know what I really think by keeping a "straight" face as we talk. I will break that expression, however, after they have had sufficient time to express their view, and I typically do this if I agree with their assessment.

Though an ethnographer's expression of aesthetic judgments is not completely avoidable, displaying such judgements complicates the fieldwork encounter, regardless of whether those judgments are positive or negative. If a performer were to see that I am delighted by what I am hearing—which I often am—it would make it harder for them to express a negative sentiment, if this was truly what they felt. The same is true for the opposite case. To preserve a performer's opportunity to offer honest assessments of their playing partner—a rare thing that is created by Maxine's simultaneously nonhuman and yet still humanlike social presence—I attempt to control the more unruly artifacts of the ethnographic apparatus, such as my face and body language.

## How Improvisers Get Along

In the three scenes where I conducted fieldwork over several years, I found that in their routine social interactions with one another, improvisers rather consistently refrain from instructing or criticizing other players or specific approaches to this musical practice.[17] No directions are given before a piece begins. No composition is used. No player serves as a leader.[18] Whether or not players expect their peers to conform to specific stylistic norms, such conventions are never explicitly specified.[19] The piece proceeds for as long as the players decide it should. Endings take place when all players have stopped playing; the desire to end is usually confirmed by the fact that all players have stopped intentionally producing sounds and are either engaged in a mutual gaze in the midst of this silence or looking at some point in the distance.

It is largely unheard of for players to stop in the middle of a free improvisation during a private playing session. Instead, a piece "ends" when the players have all come to a mutual silence. This is in sharp contrast to the performance of pre-set compositions. In a wide range of music scenes and genres, musicians will often stop a rehearsal or private performance if they feel that a mistake has been made or that some element of music (e.g., expressive intentions or style) requires further discussion. Since they neither use compositions nor explicitly acknowledge notions of aesthetic normativity (i.e., what constitutes "correct" execution), it would defy the interpersonal communicative logic specific to the culture of free improvisation for a player to stop prior to the mutual silence that typically occurs at the end of the piece.[20] If there is no composition, it is difficult for an individual to ground a potential claim that a given action in the course of the performance constitutes a "mistake" or could be executed more "correctly." Making such a claim would imply that this individual believes they have a clearer idea of how others ought to exercise the freedom

afforded to them through this practice. If there is no *explicit* stylistic tendency, then there is nothing that another player can say is "wrong" about a particular performative moment, since the community of practice itself has largely refused the notion of "right" or "wrong."

Likewise, outside of moments of making music, players largely refrain from instructive or evaluative commentary indicating their feeling that the piece should proceed in a particular manner. After a piece, expressions of obligatory praise—"That was great!" "Nice!" "Glad we could get together!"—are quite common, even if they do not reflect what a player really felt. In the Chicago, Berlin, and San Francisco scenes where I conducted fieldwork, players commonly expended a significant amount of effort in avoiding direct enunciations of negative commentary. As I often observed, if one player found themself disinterested in the stylistic tendencies of their peer, they would seek to maintain a cordial social relationship while politely declining requests to participate in any further collaborative musical activities.

Similar tendencies have been observed in ethnographic work on other free improvisation scenes, such as the southern California scene that David Borgo has studied (2002, 17). Borgo observed that his interlocutors were reluctant to explicitly articulate their disagreements with a group member's approach to collective playing. Free improvisation has become more common in university music instruction, and one might reasonably expect a greater tolerance for evaluative commentary there. However, Maud Hickey's qualitative study of such settings clearly suggests otherwise (2015). Even in a context where participants were able to express their views anonymously, improvisers show a strong proclivity towards self-censorship, actively avoiding the open expression of negative aesthetic judgments about their peers (Pras, Schober, and Spiro 2017). My fieldwork among improvisers confirms what others have observed. At a 2008 concert in Chicago, for example, I openly expressed my curiosity to one white improvising cellist, whom I will call "Carl,"[21] about whether there were certain ways of playing, listening, and interacting that he preferred in his collaborators. "What makes a 'good' improviser, in your opinion?" Brusquely disabusing me of my apparent ignorance, he refused the very idea that any sort of normative framework was at all relevant for free improvisation: "there's no such thing as a 'good' improvisor."

This denial of a notion of "correct" practice has deep roots in the ideologies of freedom and egalitarianism in discourses on free improvisation (Smith 1973; Bailey [1980] 1993; Borgo 2005; Steinbeck 2010; Corbett 2016). While disciplining or correction by peers is tolerated as an acceptable interpretation of egalitarianism in numerous other social spheres (Boehm 1993), improvisers subscribe to a widely held conception of equality, in which the very utterance of instruction or critique by peers is regarded as antithetical to the egalitarian ideal (Freeman 1972; Béteille 1977). Critical commentary from one player directed to another functions as what language and social interaction scholars refer to as a "speech act" (Austin 1962) that places the speaker in a position of authority over the addressee. Without stating this explicitly, improvisers appear to deem critical commentary as a kind of infringement of the creative liberty that the practice of free improvisation is supposed to offer each participant.

## Collaborative Ethnographic Phenomenology with Maxine

Improvisers habitually refrain from instructing or criticizing their peers, but this hardly means that they do not experience a desire to express such sentiments. An encounter with Maxine readily reveals that improvisers not only experience a desire to tell other musicians what they really think of their playing, but that experiencing such desires is a near constant feature of being with other improvisers. For one player, a white Swedish double-bassist whom I will call "Torsten," the opportunity to critically comment on how another improviser, whether human or machine, conducts themselves was both singularly unprecedented and extremely welcome. In the midst of his litany of criticisms of Maxine, Torsten interrupted himself with a broader remark about how the interaction reminded him of the remarks he held back from other players: as he put it, "I *wish* I could tell other people things like this!"

In addition to allowing players to be more forthright about their experiences, an encounter with a virtual improviser like Maxine allows musicians to feel far more comfortable stopping in the middle of a piece to make a comment. Compared to the feedback interview, or really any other approach to fieldwork currently used in the ethnography of music or social practice, stopping Maxine at the moment that one wishes to share an experiential narrative with a researcher allows a far more vivid and direct understanding of what a subject experiences in the midst of real-time human sociality. The fact that improvisers are so at ease in stopping Maxine in order to share details of their experience emerged from the beginning of the system's encounters with human improvisers in 2009.[22] Once I observed that players were comfortable stopping Maxine on their own, I explicitly offered them the option of either ending the piece as they normally would with another improviser or calling a halt in order to comment on what they were experiencing. Stopping a piece in the middle can provide better understanding of what the improviser might be experiencing at a given moment, especially compared to what they might be able to recall after the piece is concluded.

In part, the fact that improvisers are so remarkably reticent about offering critical commentary after a performance may stem from their rapid interplay with one another and the quick decision-making that occurs during the course of performance. Free improvisation may leave many players with the feeling that their memories of precise events of the piece are blurred. As saxophonist Evan Parker puts it, the interactional nature of the practice produces a sense of confusion about the nature of cause and effect in this form of music-making, even for experienced improvisers. For example, saxophonist Evan Parker describes this experience as an ongoing question: "did you do that because I did that? Or did I do that because you did that" (Parker, quoted in Corbett 1994, 203)?

Feelings of confusion about the path of cause and effect in these interactions likely stems from the fact that an improviser's attention is split between several distinct targets at any given moment during a piece.[23] Players are simultaneously listening, composing, and performing. Listening takes place in several directions as players listen to themselves as well as the rest of the ensemble. Self-directed listening focuses on the relationship between what they intend to play and what comes out of their instruments.[24] Partner-directed listening analyzes how players are interacting with one another.[25] In addition to listening, players are also conceptualizing new musical material as the piece proceeds, a task with demands similar to the act of composing notated music, but with the added complexity of a real-time constraint (Nettl 1974; Pressing 1988). To make matters more complicated, many improvisers choose to make music with tools that are either physically unstable and cumbersome (i.e., objects stacked up precariously and thus prone to toppling) or using sound-production techniques with unpredictable results (i.e., extended techniques for which sonic results are often uncertain).

An improviser handles all these tasks at every moment. Indeed, the complexity and mutual interference of music-making tasks contribute to what improvisers find exciting about this practice. For the ethnographer, though, the clutter in the attentional field means that even sober, experienced improvisers may have a foggy recollection of what took place in a performance. As a result, it is not surprising that they may have little to say about a performance immediately after its conclusion, other than a handful of hackneyed expressions of perfunctory praise.

## Maxine and Morten

By stark contrast, offering players the opportunity to abruptly halt a performance's progress allows the experience of social interaction through musical improvisation to come into focus. That is, it enables researchers and performers to highlight a particular musical phenomenon and understand how that phenomenon may structure social experience for its participants, as well as the values inscribed in these practices of interaction (see Banerji 2018). It facilitates an investigation of how "cultures" are at least partly defined by experiences of face-to-face interaction for their participants.

As was the case for many other improvisers, the encounter between Maxine and "Morten," a white Norwegian double-bassist, illustrated the many ways that this methodology greatly enables subjects to articulate specific moments of experience in social interaction. In a sparsely populated, quiet, industrial neighborhood on the southern side of Berlin, I met with Morten at my studio one morning in December of 2015 so he could play with Maxine and offer his feedback on how the system compared to a human improviser. As I have typically done since 2009, I invited Morten to play with Maxine as long as he liked for each piece, making it clear that he was welcome to stop in the middle of the piece to comment on whatever he wanted to. Like many others, Morten simply let the first two pieces, each lasting around six minutes, come to their typical conclusion—a mutual silence between him and Maxine, and a shift in the focus of his bespectacled eyes toward me and away from the bridge of his bass, which was the usual target of his gaze when playing.

Generally speaking, Morten found the system's reaction to his playing in these first two pieces to be a bit strange, but it was not necessarily stranger than what he might find playing with a human musician for the first time. Nevertheless, Morten felt that the system had an inability to commit to particular ideas. It would introduce new material, which would often prompt Morten to respond by producing similar sonic textures and structures. Rather than staying on the same idea, as Morten might have preferred, Maxine kept shifting to something new.

These comments helped to shed light on the expectations that improvisers had for one another in the course of musical interaction, especially given their nearly pious commitment to acting as if such preferences do not exist. Still, it was difficult to pinpoint precisely which moments in the piece Morten had in mind when he criticized Maxine's performance. For example, regarding the second piece, Morten referred to a moment when the system introduced a new idea, onomatopoeically describing it as a "ding" or "long" tone (Audio Example 1).[26] In listening to the piece, it is difficult to precisely locate when this new idea occurred, if it did at all.[27] However, the experiential truth Morten reported at the end of the piece still holds; how he framed his experience is surely how it "was" for him in his consciousness and memory. Be that as it may, the question remained: what moment was he referring to?[28]

**Audio sample 1—**

[Video/Audio] available online

Improvisation #2, Morten and Maxine. Recorded by the author in December 2015 in Berlin. While Morten claims that there was a moment in this piece when the system played a sound he onomatopoeically describes as a "ding" or "long" tone, it is unclear which moment in this piece he might be referring to.

Morten's experience of such moments became far clearer in the third take, when he finally elected to stop mid-performance to make a comment. In this piece, Maxine was played using a timbral setup closely resembling an electric guitar with numerous electronic effects pedals. Just prior to the stop, both Morten and Maxine had been focused on a sonic terrain of relatively inharmonic sounds.[29] In the midst of this, Maxine played a handful of clear, resonant notes in a sequence. To Morten, this suggested an intention of moving to a new sonic arena, one in which melodic material and pitch movement would be foregrounded. After a few moments in which Morten and Maxine shifted to this more melodic approach, Maxine turned back to the more abstract texture, frantically winding around its virtual fretboard and playing mangled tones (Audio Example 2).

**Audio sample 2—**

[Video/Audio] available online

Improvisation #3, Morten and Maxine. Recorded by the author in December 2015 in Berlin. Toward the end of this clip (likely around 5:48), Morten finds himself dissatisfied with the system's musical choices. At first it sounds as if the system will move on to a different mood (as Morten seems to have preferred), but only a moment later it returns to the textural intensity of a few moments prior. I have provided the whole clip here in order to better allow the reader to understand the interactional context leading up to this moment.

A few seconds after Maxine's turn back to the previous texture, Morten signaled for me to stop the piece:

> **M:** Yeah, actually that—that's a place where...
> **R:** Yeah, please.
> **M:** where, where it introduces an idea, that's super clear, and then I kind of went along with it and then it kind of *grah!* just went off in a, a completely different direction!

I have had many similar experiences playing with Maxine. Often, when Maxine suggests a new direction within the overall evolution of the piece, I follow this suggestion. Nevertheless, Maxine frequently makes yet another abrupt change like a player who is suddenly disinterested in pursuing what they have just suggested. After I briefly shared these experiences, Morten continued:

> **M:** A minute before that I was thinking "Ah, it would be great if it would just like, you know, kind of just break off what it does and then ... maybe throw in a completely different idea" ... I find [that] super stimulating as an improviser. If you're playing with somebody who just stops, you know, in the middle of [an idea] ... where *you* wanted to continue, but then the other guy just ... breaks off, and then suddenly like throws in something else that forces you to like refocus your whole ...
> **R:** Yeah
> **M:** ... idea, and then it kind of in a way did that ... but then it didn't follow up on it, which ...
> **R:** Right
> **M:** ... would have been great ... I think.

## Breakdown

Morten described a very specific dimension of experience in this situation. He did more than just describe the way the situation appeared, sounded, and felt as a whole, though these elements are surely present in the narrative he offers. He also described the experience of a *variance* between how events proceed and his expectations for how they should be. This variance is a thoroughgoing feature of the experience as a whole.

Inasmuch as Morten's engagement with Maxine elicited commentary on what free improvisation is, not as practice, but as experience, it also created an opportunity to understand structures of experience more generally. In post-Heideggerian thought, the form of experience Morten described falls into the broad category of "breakdown" (Heidegger [1926] 1967, §16; H. L. Dreyfus 1991, 70–83).[30] In such moments, the givenness and routine quality of everyday action is interrupted for some reason; in turn, the interruption leads a subject to become more aware of a variety of taken-for-granted features of their existence, experience, and embodiment than they would be in the course of smooth, undisturbed, habitual action. Whereas one might have never reflected on or questioned the nature of certain actions because they are utterly regular and basic to one's typical way of dealing with the world, breakdown prompts a kind of reflection about what those actions are, why one is engaged in them, and why they tend to take place the way that they do.[31] In Morten's case, Maxine's behavior and its deviance from his expectations prompted

him to reflect on what it means to make music of this kind with another human being. While Morten would not likely reflect on what defines a person as a performative, interactive, co-present being in the world, Maxine's nonhuman status enables him to reflect on his assumptions about how the humanness of another being's presence signifies itself to him in a typical encounter.

Though it is often glossed as a single concept, breakdown refers to three different kinds of disturbance and three different ways that human beings deal with such disturbances. Each of these three is relevant not only to Morten's meeting with Maxine but also to any and all practices where improvisatory modes of action take place. In the situation of "conspicuousness" (*die Auffälligkeit*),[32] action is interrupted or takes place in a way other than expected, such that it prompts no reflection on the nature of the action itself; the problem emerges, but is immediately solved. For example, a rock drummer's unaccompanied solo break drags or rushes, but the rest of the band comes back in precisely as expected because the drummer clearly indicates where the downbeat or other anchoring temporal location should be. In the situation of "obstinacy" (*die Aufdringlichkeit*), a more significant interruption takes place. Coping requires thought and effort. This thought and effort prompts a momentary reflection on the way action routinely takes place, so that the problem can be addressed. For example, consider the situation in which the drummer's solo break does more than just drag or rush; a whole beat is added or inserted, thereby requiring the group to think fast and decide how to deal with the gaffe to keep a smooth flow to the performance.

In the situation of obtrusiveness (*die Aufsässigkeit*), action comes to a halt. This situation prompts a more pronounced reflection on the nature of the action, its necessity, and why the routine manner of executing it is so easily accepted. In our second example, the inaccuracy of the drummer's break may result in one of two things: it either sends the band into a (hopefully) short period of emergency regrouping procedures, so that the form of the song is preserved or at least reinstated; this would be an example of obstinacy. If the band stops entirely, unable to make sense of how to proceed in the moment, the situation could be characterized as obtrusive. As a consequence, the drummer may also be relieved of their duties indefinitely, or the band may discuss whether giving the drummer a solo is worth the risk.

Morten's interruption of his third piece with Maxine exemplifies obtrusiveness. Events proceeded in a manner that displeased him or upset his expectations. He called action to a halt. Together, we reflected on why Maxine is a frustrating player to work with, a conversation that also led us to discuss what makes a good playing partner. Without Maxine's obtrusiveness, we might not have reflected on a routine and taken-for-granted aspect of improvisatory musical interaction and tacit expectations about how these interactions should occur—specifically, the expectation that the player who introduces new material should commit to the ideas they have just introduced, especially when other players implicitly assent to this shift in direction through their sonic choices after the initiating player's suggestion. With Maxine, this expectation was not met because the system did not continue in the direction it suggested, even as Morten accepted the musical suggestion himself. The fact that Maxine declined to do what we both might have expected led us to consider what we desire from the conduct of another improvising musician in this context.

But beyond the obtrusive way that Maxine played tricks on its human collaborators, Morten's commentary on the system's behavior also suggests that the less drastic forms of breakdown—conspicuousness and obstinacy—are also common elements of playing with other improvisers. In fact, these two forms of breakdown may be intrinsic to improvisation. In cases of conspicuous breakdown, one player's actions require others to quickly move on to a different musical idea. In such cases, an individual's intended or achieved course of action is one that they come to feel is inappropriate or undesired by others; they shift course, but the shift requires little or no active cognitive labor. These moments do not prompt improvisers to reconsider the basic grounding principles of the practice of free improvisation. In Morten's case, conspicuousness takes place in the moments where Maxine changes the direction of the piece; here, Morten is prompted to move on to new material, but this shift hardly requires reflective thinking on his part. It simply happens.

Likewise, obstinacy takes place when an improviser notes that things have gone awry, whether with Maxine or another human being, and momentarily thinks about how to proceed. A brief reflection on the way things have been taking place passes through the improviser's conscious awareness, and a new course of action is chosen. It is often the case in an improvisatory practice that it is not clear how one should respond to the situation, especially if another player engages in actions one is not expecting; this lack of clarity prompts a brief moment of active reflection about how to proceed.

Ultimately, the encounter with Maxine invites an elaboration of the post-Heideggerian concept of breakdown. The three subcategories of breakdown retain their utility as a means of distinguishing between various moments when routine action is interrupted. However, Morten's commentary on Maxine suggests the three-fold distinction is rather precarious. In other words, a moment of obtrusiveness could easily have been one of mere obstinacy or conspicuousness. The instability of the distinction stems from the fact that the category of obtrusiveness refers to moments when action cannot be continued and in which neither quick coping nor brief, deliberative course correction is possible, as is the case in moments of conspicuousness or obstinacy, respectively. The obvious question raised by this distinction is whether in a given situation it is permissible or even possible for an actor to discontinue their action. For example, in many performance practices before an audience, it is rather exceptional for performers to stop before the conclusion of the piece, however "piece" is defined. Similarly, it may not be possible for an actor to engage in even a brief moment of self-reflective coping in order to handle what Heidegger describes as an instance of obstinacy.

Whether a moment of breakdown turns out to be obtrusive, obstinate, or conspicuous depends on whether the structure of the actor's present activities allows them to stop action entirely or pause to think about how to proceed. When cessation of action is possible, obtrusiveness is possible. When deliberation is possible, obstinacy is possible. When neither are allowed, conspicuousness is the only form of breakdown that takes place. Going back to Morten's experience, the encounter with Maxine and the fact that it uniquely enabled him to feel comfortable stopping the action allowed for breakdown to take the form of obtrusiveness, rather than mere conspicuousness or obstinacy. Likewise, because obtrusiveness brings action to a halt, it further invites the subject to speak more directly about what they experienced or at least attempt to verbally assemble an account of that experiential moment.

## In Search of Obtrusiveness

In terms of field methodologies, the privileging of obtrusiveness afforded by the encounter between an artificial social agent and its human counterparts enables an ethnographer to more closely examine a subject's moment-to-moment experiential, first-person engagement with the world. While Heidegger's writings have enabled his posthumous interpreters to further theorize breakdown, that work still leaves open the question of how a social scientist might empirically examine such experiences. In the way that Heidegger describes them, the various forms of breakdown sound almost as if they would be readily apparent and perceptible; that is, an ethnographer would hardly struggle to identify them in the course of fieldwork.

Indeed, breakdown takes place all the time. Insofar as improvisation is a ubiquitous dimension of everyday action (see Lewis and Piekut 2016), it gives rise to the ubiquity of breakdown. Aside from the cataclysmic disruption of obtrusiveness, however, moments of breakdown are hardly perceptible because of the fluent coping that is integral to routine human functioning in the world. Though they do not draw on the Heideggerian notion of breakdown, a variety of theories and empirical observations of social action, within and beyond music, sustain this thinking (Goffman 1967; Schegloff, Jefferson, and Sacks 1977; Brinner 1995).

That breakdown takes place cannot be equated with the notion that breakdown is easily recalled or observed.

On the one hand, the fact that an encounter with Maxine elicits an improviser's account of their experience of social interaction is a product of the specific ideological legacies cooked into the history and practice of free improvisation. Improvisers in this scene deeply value freedom and egalitarianism. This leads to their abstention from commentary on what they experience as they improvise. On the other hand, it is not at all uncommon for individuals to undergo a broad range of forms of breakdown in the midst of daily goings-on with others. Because people are primed to create smooth social interactions, they rarely comment upon those moments of breakdown, or even recall them. This is hardly unique to forms of musicking which are self-consciously understood as "improvisatory"; rather, it is an essential feature of the improvisatory nature of everyday life, within music or beyond.

As is the case with the feedback interview or participant observation, the encounter with an artificial social interactant provides no means of directly accessing what a subject experiences and how the world manifests itself to that individual's consciousness. Several forms of distance remain. The subject articulates their experience in words; while these words give a sense of the experience they describe, they are at best just a close approximation. Even though encounters with Maxine allow one to stop mid-performance and immediately comment on any element of what one experiences, there is always at least a slight delay between the onset of that experiential now and the moment that the experiential contents of one's state of being are then related to a researcher verbally. While Morten explicitly discusses a kind of irksome experience in improvisation he might not talk about otherwise, his description of his experience still leaves out a lot of the detail that would be helpful in gaining a better understanding of what certain moments might have been like for him.

Such limitations aside, these encounters enable a proximity to the subject's experience that has not been possible through other methods currently practiced within the arena of phenomenological ethnography. It is nonetheless quite easy to understand why most ethnographers of music and social practice have not pursued this approach. Given the centrality of computational skills in creating a system like Maxine and the fact that ethnographers are rarely, if ever, trained to do such work, it would appear that this method is a novelty that can be pursued by the handful of polymaths possessing the rare combination of capacities it requires.

As daunting as this may seem, there are many options for ethnographers interested in integrating such methods into their fieldwork. Aside from designing such systems themselves, music researchers might collaborate with scholars who possess the requisite skills, or they might focus on virtual re-embodiments of musical practice as research objects in and of themselves. For example, ethnomusicologist James Kippen and computer scientist Bernard Bel's "Bol processor" project is similar to my fieldwork with Maxine (Kippen and Bel 1989). Built to create improvisatory rhythmic patterns according to the stylistic framework of North Indian tabla performance, Kippen and Bel used the Bol Processor to elicit commentary from expert musicians on the validity of the system's output with respect to their understanding of the norms of this practice.[33]

Besides participating in collaborations such as this, the opportunity to pursue such fieldwork is available to any scholar interested in the ever increasing population of nonhuman musicians, which re-embody a variety of longstanding musical practices. The purchase of this method for phenomenological work on music has already been recently established (McGraw 2016). Other ethnographers have also illustrated how the study of AI performers provides insights into the "human" qualities of human music-making (Eidsheim 2009; Kenmochi 2010; Wilf 2013). Nevertheless, there remains much to be explored in this area.

## Despite "Impossibility"

Subjecting virtual musicians like Maxine to the critique of their human counterparts presents numerous possibilities for gaining a better understanding of what musicians experience in the course of music as a social practice. Nevertheless, a basic distance remains between a subject's lived experience and what a researcher understands of that subject's encounter with the world. There is certainly far more to phenomenological ethnography than simply seeking a vivid sense of what another subject experiences. As Dan Zahavi (2019) has recently emphasized, an examination of "what things are like" is only one means in the broader phenomenological project of uncovering the variety of ways that experiences are assembled, the conditions that enable their possibility, and how the experiential revealing of the world comes to differ from a rationalist, scientific account of things as they are.

Be that as it may, there can be no question that any and all efforts that researchers make to improve their ability to understand precisely what a subject experiences in the moment will help to produce more holistic accounts of structures of conscious experience. The fact that it is impossible for a researcher to experience precisely what the other subject does should not be taken to mean that scholars must give up the pursuit of field methods that might enable this kind of understanding. If anything, the difficulties of knowing what others experience should prompt ethnographically trained phenomenologists to experiment with approaches that may allow for a more intimate, vivid conception of how a social environment is revealed in the experience of a particular individual (Desjarlais 2005; Desjarlais and Throop 2011).

As Morten's encounter with Maxine demonstrates, the critique of artificial re-embodiments of human presence serves as a vital, yet almost completely unexplored, means of doing ethnographic phenomenology. Though the methodology put to work here actively foregrounds such encounters, it builds on a longer arc of criticism begun by Hubert Dreyfus (1972, 1992, 2007), which uses the failure of AI research in order to illustrate the validity of the thinking of a variety of phenomenological considerations of human existence and consciousness. There is a fascinating irony here. While almost constantly pointing out how the project of artificial intelligence research was a colossal and astronomically expensive failure, Dreyfus's critique of AI inadvertently demonstrated how incredibly useful these failures were as case studies for corroborating phenomenological ideas about the structures of human experience.

In his work, Dreyfus noted the starkly disembodied conception of human consciousness that drove "symbolic" AI, which largely assumed that human knowledge took the exclusive form of explicit, propositional statements. While the AI community of the early 1990s gradually accepted the fundamental flaws of the symbolic paradigm, Dreyfus pointed out that Merleau-Ponty ([1945] 2002) and Polanyi ([1966] 2009) had already offered a number of reasons why such a conception of knowledge was flawed (H. L. Dreyfus 1972, 147–167). Human knowledge only partially takes an explicit, declarative form. A great deal of what human beings "know" manifests itself in the form of what Merleau-Ponty understood as embodied knowledge (or what Polanyi called "tacit knowledge")—implicit, bodily understandings that are part of a person's experience but that exist on the edge of their attention and are often difficult to articulate and describe. Rather ironically, the failure of the disembodied approach of symbolic AI served as a rather vivid illustration of Merleau-Ponty's ideas about embodied consciousness, which he theorized decades earlier.

Another irony manifests itself in the disembodied quality of Dreyfus' commentary on AI itself. Despite his emphasis on the problems of a disembodied approach to understanding consciousness, his critique of AI was not based in an embodied encounter with thinking machines themselves. Rather it was based in his close readings of the design rationale of AI researchers who built these systems.[34]

It is one thing to critique AI as a failure to comprehend the nature of human consciousness or particular human practices; that any and all such representations or performative re-presencings of human practice will fail is inevitable, be it an ethnographer's attempt to faithfully render their subjects' experiences in

words (Feld 1987; Brettell 1993; Fassin 2015; Abu-Lughod 2016), a filmmaker's attempt depict them artistically in moving images (Madison 2005), or a programmer's attempt to model them in computer code. It is quite another, however, to carefully examine how and why such representations—textual, filmic, sonic, performative, or algorithmic—fail when they come into contact with the human beings they purport to represent. For all the richness and creativity of Dreyfus's critiques of AI, they only begin to suggest the potential that lies in a critique of artificial social interactants from the perspective of their interlocutors; they are only a small step in the broader project of exploiting the failures of such technologies as a means of ethnographically examining the structures of experience.

In addition to revealing details of the person's moment-to-moment experiences, the research methodology described in this chapter illustrates how local notions of social prestige challenge the efficacy of phenomenological ethnography. Return to the case of the double-bassist Torsten. Like many other improvisers over the past half century, Torsten values freedom and egalitarianism as basic ethical principles of his coexistence with other players. This constrains how and when he feels free to be honest about what he experiences when working with other musicians, especially when those experiences are undesired. To openly discuss or give an unambiguous indication of his thoughts and feelings (e.g., scowling angrily, rather than having a neutral gaze) would be to indicate to others that he does not respect the individualistic notions of freedom that ground this domain of artistic practice. Spurning this value risks a loss of social prestige among other improvisers.

In the scenes of free improvisation where I have conducted fieldwork, the values of freedom and egalitarianism create a barrier to frank discussions of how individuals experience social interaction with other performers in the course of music-making. Beyond the case of Torsten, this means that ethnographers must be attentive to the types of reported experiences that are deemed socially valuable in a given cultural world. For example, in many social spheres, the claim of a connection to the divine is highly prized. Those who can make such a claim are often the beneficiaries of greater social status and privilege. While not denying that some sincerely believe in the truth of their experiences with the divine, a measure of skepticism about such reports is warranted, as it is at least minimally plausible that the experiences a person may describe are informed by their desire to acquire or maintain prestige. Local social values shape what kinds of experiences an ethnographer's interlocutors will likely report. If an ethnographer is interested in what people experience, then they may want to find ways for their interlocutors to be frank about their experiences without the pressure to assert that their experiences accord with local social values.

The use of the methodology described in this essay does more than enable ethnographers to examine experience in novel ways; it pushes them to ask the question "what is a human being?" This methodology pushes the question beyond the issue of biological classification into the domain of performance: "what is 'humanness' as a dimension of performance?" Returning to Heidegger's maxim, "ontology is only possible through phenomenology" (Heidegger [1927] 1996, 31); an encounter with a quasi-being like Maxine is not about what human beings "are" from a scientific viewpoint. Rather, it is about what makes one human being feel as though they are in the presence of another, even if the "other" is not a human being at all. Given that free improvisation, like any musical practice, is a specific cultural form, the specificity of the encounters that occur there highlights the ways in which the performative definition of "humanness" is always culturally specific. What might be regarded as a more "human" performance in one cultural context may be regarded as less so in another. The use of AI in ethnographic fieldwork as described in this essay presents a novel method of enabling humanists and social scientists to examine how "humanness" is conceptualized in terms of specific features of social performance in real time. A method that allows the ethnographer to examine how participants of a specific social world conceptualize "humanness" can only further enable them to understand the phenomenology of music and social life as culture.

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## Notes

1 This does not mean that an analysis of the structures of a subject’s experience is the sole focus of phenomenology, either. As an experience in and of itself, an ethnographer’s encounter with persons, situations, and environments in fieldwork is also a body of sensations, actions, and feelings that are also an important object of analysis, especially since these experiences are the basis for the ethnographer’s claims about social life in their field site. It is just as important for the ethnographer to analyze the structure of their own experiences of fieldwork as it is for them to examine these structures in the everyday lived experience of their ethnographic subjects (for further reflection on these issues, see Rice 2008; Titon 2008).

2 Where many qualitative researchers assume that first-person experience is the primary goal of phenomenology, philosopher Dan Zahavi (2019) has recently pointed out that this is a misreading of why first-person accounts really matter for a consideration of structures of experience. They are of crucial importance, but primarily as a waypoint in a broader endeavor to understand the relationship between *how* the world seems to the subject and *why* the world seems so.

3 Harris Berger (2015, 12–14) reviews many of these in a recent overview of phenomenological approaches to the ethnography of music.

4 This is not to say that language completely fails to transmit what someone experiences, but rather that the problems of self-reported accounts tend to raise more questions than answers. The questions they raise are ones that the researcher might not have encountered otherwise, and so interviews and other verbal descriptions of individual experience remain quite valuable alongside other phenomenological techniques in ethnographic fieldwork (see Good 1994; Mattingly 1998). A subject’s narrativization of experience may not be objectively verifiable, but it is often a fruitful path to a researcher’s understanding of an individual’s encounter with the world.

5 Reflecting on the relationship between participant-observation and phenomenological ethnography of music cultures, Rice (2008) and Titon (2008) make similar claims.

6 In a rather provocative way, Bakan's approach to phenomenological ethnography (1999) embraces the divergence between what a subject and a researcher experience as they participate in the same sociocultural practice in order to suggest that the ethnographer is ultimately only qualified to speak on their own experiences rather than the experiences of their ethnographic subjects.

7 This technique is identical to elicitation methods used in visual anthropology (De Maaker 2000; Harper 2002). Without explicitly referring to their fieldwork technique by either of these terms, a number of scholars have used similar approaches (Feld 1987; Widdess 1994). In many ways, the feedback interview functions as a critique of the epistemological validity of ethnographic participant observation. One can see and hear the bodily behavior of one's interlocutors while participating in actions with them, but this does not mean that one can accurately infer what those individuals experienced in those moments (see Stone 1982).

8 Berger's work with his interlocutors raises dozens of new questions for a phenomenological perspective on the concept of tonality, and it invites music theorists to move away from the objectivist stance that tonality is determinate once pitch values and durations have been established. Taking a pragmatic view, his work suggests that the tonal center of gravity of a given musical passage is a product of a player's embodied encounter with sound in real time.

9 In another moment, Berger notes that a player became "exasperated" (Berger 1999, 151) when he was asked to comment on what he was paying attention to at various moments in a performance. As a skilled and experienced performer working night after night, he did not reflect on what he was doing in this manner.

10 Though AI systems are built with this pretension, it is never to be assumed that they are perfectly successful in evincing a human presence through their interactive or sensory qualities.

11 This point applies mainly to virtual social agents, which are referred by a variety of names, such as "androids," "embodied conversational agents," or "social robots." While these kinds of systems differ in various ways, they are all designed to engage in social interaction with human beings as they would with one another. While the development of such agents comprises a large swath of research in AI and the related field of artificial life (AL), both fields are far wider than this. For example, some AI researchers seek to create technologies that do humanlike thinking but do not engage in humanlike interaction. That said, even these AI agents can be understood as modeling social interaction, as the productive tasks that they execute are meant to supplant forms of human action that would take place as a collaboration between individual humans.

12 Bernard Bel and James Kippen's "Bol Processor" algorithmically models the Hindustani classical practice of using vocables as a framework for generating and describing rhythmic sequences; it is an important predecessor for the methodologies I describe in this chapter (see Kippen and Bel 1989, and several other publications from these two in the same time period). Their project was less concerned with modeling musical interaction or understanding musical experience than it was with understanding the principles by which improvisers compose rhythmic sequences as they perform.

13 Superficially, this method resembles the ubiquitous social practice of teacher-student interaction. In a music lesson, the teacher typically reserves the right to stop musical action in order to offer feedback and commentary. The crucial difference, however, is that the commentary a teacher gives is rarely concerned with describing their own consciousness; rather, the commentary is intended to instruct the student in how to improve their acquisition of the practice. Nevertheless, a teacher-student encounter could well serve as a productive means of pursuing forms of ethnographic research practice with a view to eliciting first-person experience. Aside from a handful of examples (Rice 1995; Downey 2008), ethnographers have yet to fully explore this possibility.

14 While the name of the system is gendered, I did not intentionally design Maxine to perform a particular gender in social interaction. As I explain elsewhere, I spent several months referring to the system as "Max" before renaming it "Maxine" after a literary inspiration (Banerji 2010). While improvisers encountering the system know it by a gendered name, not all accepted this gendering. Some refer to Maxine in their commentary as "it," while others (particularly Francophones, who often hear the system's name as "Maxime)" refer to it with the gendered pronoun "he." The pronouns that a player uses to refer to Maxine may reflect how they experience Maxine's gender, but this complex issue is beyond the scope of this essay.

15 Since Lewis's pioneering work, many other designers have created AI systems that function as fellow performers of free improvisation in collaboration with human performers (Blackwell and Bentley 2002; Assayag and Dubnov 2004; Hsu 2005; Casal and Morelli 2007; Collins 2008; Young 2008; Bown 2011; Yee-King 2011; Carey 2012; Linson et al. 2015). Design of

these systems differs drastically. Overall, however, the systems are all built to function as fellow performers in collaboration with a human performer of musical free improvisation.

16 Naturally, I had my own thoughts on this matter, having developed the system as a duo partner with myself on saxophone. Given the obvious bias that I have in evaluating the system, I thought it wise to seek the feedback of other players, particularly those with no interest in music computation. Regrettably, it is all too rare that the evaluation of such systems includes the feedback of musicians other than the designer.

17 These observations are based on my ethnographic work as a performer (saxophonist) and participant in scenes of free improvisation in Chicago, Berlin, and San Francisco over the past decade, and I assert that they hold for this performance genre more generally. I conducted fieldwork in Chicago from mid-2007 to the fall 2010, in the Bay Area from fall 2010 to summer 2014, and in Berlin during May 2010, summer 2012, and from fall 2014 to fall 2016. Of these three scenes, Berlin's was the by far the most active in terms of concerts taking place per evening and the number of players residing in the city (see Arthurs 2015); the Chicago and Bay Area scenes were also quite active, but less so compared to Berlin. The choice of these field sites was a mixture of convenience and intention. Since I was already a performer in the Chicago scene, I used this as an opportunity to conduct ethnographic fieldwork. When I relocated to the Bay Area to pursue a doctoral degree at the University of California, Berkeley, I began conducting fieldwork there as well. By contrast, Berlin was a field site I chose far more deliberately and largely due to its historic importance as a hub of free improvisation from the 1970s onward and the fact that it currently boasts what is arguably the largest concentration of performers of free improvisation in the world, thereby making it far easier for me to find research participants.

18 One or two players may be responsible for arranging the gathering or ensemble. Even so, players tend to deny that this puts them in a position of leadership. Whether or not implicit leadership or hierarchy emerges is a different matter entirely.

19 Despite claims that free improvisation is unconstrained by musical style, a half century of recordings and performances, mostly in Western Europe, North America, and Japan, reveal a few basic trends in the stylistic contours of free improvisation: the avoidance of functional harmony and pulse-based organizational structures in rhythm, and the privileging of the exploration of the timbral possibilities of one's instrument, voice, or sound-making apparatus (see Backstrom 2013). Of the scenes in which I conducted fieldwork, approaches varied considerably. Some focused on historically common performance techniques and timbres for their instrument; others attempted to redefine the sound of their instrumental apparatus by using extended techniques, "preparation" (i.e. making mechanical modifications to their instruments, as in the practice of prepared piano), and other physical or electronic manipulations of the sound. In terms of stylistic range, few players were solely active in free improvisation, with jazz, rock, and Euro-American elite music being the main genres that these players regularly performed.

20 This is not to say that no performer of free improvisation performs notated or otherwise composed music. Indeed, this kind of work is common among many proponents of free improvisation. Nor is it to deny that improvisers occasionally use notated compositions in their improvisatory work. These exceptions aside, the practice of free improvisation is characterized by the kind of abeyance of composition described here.

21 Throughout, I refer to all of my interlocutors with pseudonyms. This essay focuses on only a handful of the more than 200 improvisers with whom I have conducted fieldwork, nearly 100 of whom have played with Maxine. Rather than try to address the breadth of their remarks, I focus on a few improvisors, an approach that offers a sense of depth that would be lost in a broader review. Their commentary is largely representative of the many players I have worked with in the course of my fieldwork.

22 Not all improvisers chose to stop playing in the middle of a piece and comment on their experience. In many cases, the player would end their improvisation with Maxine in the same way that they would with human players—by arriving at a prolonged mutual silence and making gestural and gaze-directional cues that signal the piece's end. There is nothing about Maxine as a system that gives improvisers a unique ability to stop in the middle of a performance. A similar approach could be taken in private playing situations among human improvisers, wherein players would be invited to stop when they have something to say. However, to speak up, the players would need to be comfortable with openly disclosing their sentiments about the interaction, a type of disclosure that improvisers are typically unwilling to make.

23 This is quite similar to the cognitive demands of listening in real time while burdened by other tasks, as described by ethnographers who have studied other practices of improvisation (see Berliner 1994; Berger 1999; Duranti 2009) and other types of ensemble performance (Bregman 1994; Keller 2001).

24 This is not unlike the self-directed listening that is integral to everyday speech (see Levelt 1983).

25 For further commentary on the analytical nature of listening as an element of musical interaction in free improvisation, see commentary from George E. Lewis (quoted in Chadabe 1997, 300).

26 It is not uncommon for seasoned performers of free improvisation to refer to various timbral types onomatopoeically. This differs from the practice that Thomas Porcello documented in his work on professional recording studios, where musicians and engineers tended to avoid onomatopoeic descriptions of timbre (Porcello 2004). The use of such descriptive strategies is quite common among improvisers, a factor which lends further difficulty to the understanding of which moment in a piece they might be referring to.

27 For example, there was a moment in the piece when it was difficult, even from a third-party perspective, to tell whether it was Maxine or Morton who had introduced a "new idea." Such moments resonate with Evan Parker's claim (referenced previously) that there is a sense of ambiguity inherent in highly improvisatory musical interactions.

28 This question remains especially open given that there are several candidates for the kind of shift or exchange he described.

29 An inharmonic sound is one that has a number of components with relatively constant frequencies, but those frequencies do not aggregate into the production of a clearly audible pitch (see Smalley 1997).

30 The term "breakdown" is often attributed to Heidegger (Koschmann, Kuutti, and Hickman 1998), even though no such term appears in the two widely read English translations of *Being and Time*. Further, the passages commonly referenced for this concept do not use any German term that closely corresponds to the English word "breakdown." This term is therefore best understood as a handy refashioning of Heidegger's thinking, which was developed most prominently in Hubert Dreyfus's commentary on *Being and Time* (H. L. Dreyfus 1991); it is for this reason that I use the term "post-Heideggerian" to describe this concept. "Breakdown" is often discussed as if it were a unified concept in Heidegger's work (see Zigon 2007, for example), but a more careful reading of Heidegger reveals that it is collection of sub-concepts, each of which describes more specific ways that human beings respond to disturbance.

31 The kind of reflection prompted by breakdown is not unlike the kind of sudden awareness of the taken-for-granted nature of the social world precipitated by Harold Garfinkel's "breaching experiments" (1967, 35–75), in which a rupture of everyday social norms is used as a way of examining the constitution and performance of norms themselves.

32 The two translations of *Sein und Zeit* in English (Heidegger [1927] 1962, [1927] 1996) concur on the English rendering of the German terms for the three forms of breakdown.

33 The "virtual gamelan" project at the Künstuniversität Graz also centered upon the design of an artificial ensemble of performers (Grupe 2008), though it is not clear if a similar elicitation method was used there.

34 Of course, this is not Dreyfus' fault. Given the disembodied nature of the early work in AI, opportunities for an embodied encounter with an AI were few and far between.