ON SENSE-MAKING, GROOVE, AND CHOICE IN EXPERIMENTAL IMPROVISED MUSIC

JOSHUA BERGAMIN UNIVERSITY OF VIENNA

CHRISTOPHER A. WILLIAMS UNIVERSITY OF MUSIC AND PERFORMING ARTS, GRAZ
AND GUSTAV MAHLER PRIVATE UNIVERSITY FOR MUSIC

> One piece of advice I find myself frequently giving to musicians in group improvising situations is not to focus on what they can do at any given moment... but instead to focus on what the music needs [...]
>
> David Borgo (2014, 33)

> Interviewer: How do you know what the music needs?
> Robin Hayward (Tuba, Splitter Orchester): You ask it
>
> (Musical) Ethics Lab II, August 2022, Berlin

1. Introduction

Improvised music is often held up as an exemplar of artistic and personal freedom. A popular conception sees improvising musicians—especially towards the "freer" end of the spectrum—as having the space to do just about anything. But actual improvisations—conditioned by the actual people, spaces, tools, and scenes that perform them—are (also) processes of sense-making. As such, we will argue, they demonstrate in a very clear way how sense-making is enactive and participatory—how it involves a complex interplay between agents who are coupled together by bodily sensation and social norms with the other-than-human environment, which likewise acts on its enactors. Musicians bring music to life, but that music has a life of its own.

In this article, we will show how music can be understood as an emergent agent by examining the particular example of "groove" in experimental improvised music. We begin by looking at the phenomenon of groove more broadly, as an "organising principle" that emerges *between* musicians, and that structures them by both enabling and constraining creators' active choices. We then revise this picture by taking a cue from Charles Keil's concept of "participatory discrepancies", which emphasises the sense that these structures are themselves ongoing processes, and which include musical parameters beyond meter and groove. The sense of music as an unfolding, actively structuring participant in its own creation—we then argue—resonates with Hanne De Jaegher and Ezequiel Di Paolo's (2007) enactivist account of "participatory sense-making", with structures such as groove playing the role of an "emergent autonomous organisation" that participates alongside the musicians in the overall musical event. Our account therefore brings into question the role of *choice* in musical improvisation. In contrast to frequent accounts that stress individual freedom, we argue that the space of possible musical actions is constrained by the need to *make sense* in each particular, situated context. Furthermore, what musicians (and audiences) *hear*—and thus, what they *can* respond to—is both facilitated and constrained by emergent features (such as groove) that operate with a degree of autonomy from the will of any individual performer.

We illustrate this theoretical argument by exploring the emergence of groove in experimental improvised music, via a collaboration between the authors and the 21-piece improvising Splitter Orchester. Although groove is not a given in experimental improvisation, for that very reason its emergence, evolution, and propagation across the group show in very overt terms the sense of autonomy it has over and above its players. We conclude with the suggestion that these features are present, if less visible, in other forms of music, too.

2. The Act of Musicking

As musicologists Christopher Small (1998), Nicholas Cook (2013; 2017), and others have noted, music is something we *do*. While this may seem obvious to musicians, it is only relatively recently that philosophers and music scholars have approached music as an enacted process, rather than something like an object. Our everyday way of talking about musical 'works'—songs or symphonies—can obscure the fact that such works are unfolding and temporal. Music only exists *as* music in the moments when it is enacted by musicians and/or interpreted by audiences.

On the philosophical side, scholars such as Høffding and Schiavio (2021) and Solli and Netland (2021) have discussed how various elements of musical performance should be seen as explorative and enacted skills. Even performing a well-practiced score—the archetypical "work"—requires ongoing sensitivity and situational responsiveness as the music is brought to life anew each time. From another angle Krueger (2009, 2011) has emphasised how listening to music is itself an active and skilled process, one that fuses the extended sequence of experienced sounds into a cohesive whole.

To question the way we think about enacting music is thus also to raise questions about musical agency. If musicking is an active process, then the various, inextricable elements of that process—

not just musicians, but also instruments, spaces etc.—all contribute to how that music takes shape, in ways that aren't reducible to the intellectual decisions of any individual agent (Clarke, Doffman, and Lim 2013; Cobussen 2017; Wheeler 2018). To the contrary, many musicians often report experiencing the music—the unfolding sonic situation—as having a sense of agency in and of itself, that it "wants" to be a certain way (Borgo 2014; Schuiling 2022; Bergamin forthcoming).[1]

In what follows, we explore musical agency by bringing theory into direct dialogue with musical practice. As diverse approaches to a shared concern, philosophy and music complement each other both by making phenomena more visible (or rather, audible), and by generating new questions from practice. In particular, we can see and interrogate the way that music is not only the unfolding of a process, but itself a participant in the action.

We will focus on the musical phenomenon of groove, not only because it exemplifies significant features of music's autonomy, nor simply because it has been the topic of growing interdisciplinary research, but also because everyone can feel it. Groove, we will argue, is an example of an "organising principle" that serves both to enable and constrain the space of musical action by structuring which musical possibilities "make sense" in the moment of enaction. Whereas much literature on groove (Madison 2006; Witek et al. 2014) focuses on the audience's experience, and Krueger (2009; 2011), Roholt (2014), and Witek (2017) have emphasised the active, bodily elements of *listening* to music, our focus here is on performers—who are of course listeners as well—and how they participate together with the music they produce. Nevertheless, we should not forget that listening is an active form of participatory experience as well, although we cannot dwell on it here.

Of course, not all music involves groove, and many other musical features could play the role of "organising principle", even simultaneously. For example, drones, as we shall see, frequently arise in experimental forms of improvisation for their ability to unite vastly different sounds into a common musical action. But since rhythmic grooves appear across a wide variety of genres and practices, we focus on groove here in order to facilitate comparison across other styles discussed in the literature. Many of the arguments we make about groove could also apply to other musical parameters and phenomena, although the extent of such overlap will have to remain a question for future research.

3. What is groove?

3.1 The grid

Groove is a notoriously difficult concept to pin down, both analytically and practically for players. The most common, and perhaps least helpful, definition is that groove is a *feeling*. This vague term has itself been used in multiple senses, either to describe the feeling *of* the music (it feels "laid back" or "upbeat") or to describe a feeling engendered *by* the music ("groove is a feature of music that makes you want to move" [Janata, Tomic, and Haberman 2012, 57]). Among music scholars, there is more agreement that groove involves subtle musical nuances (Roholt 2014), "microtimings"

(Iyer 2002), or "discrepancies" (Keil 1987), wherein musical actions create particular "feels" by deviating from a metrical norm.

Understood in this way, groovy music—such as in jazz, rock, or hip-hop—is seen to be structured by something outside of and between the performers—a metric "organising principle", or what is frequently described by musicians as "the grid". The grid structures where musicians can "place" sounds; in the simplest terms, those temporal spaces represented in a score as quarter or eighth-notes. Of course, what makes groove *groovy* (and thus difficult to represent) are the discrepancies from such a grid. Laid-back strikes land slightly "off" the grid lines, ghost notes "skip" over them. Yet in doing so, such discrepancies nevertheless *imply* the grid—it is what they are discrepant *from*. That is, our shared intuition of an "invisible" grid is what allows us to make sense of the music *as* groovy.

Depending on both the individual player and the genre, musicians have the freedom to be more or less discrepant. As a consequence, a groove may feel relatively "laid-back", "edgy", "locked-in", or even fall "out of time". A groove may even shift between such states in a single performance (Butterfield 2010, 171–73). Nevertheless, the "grid" also plays a constraining role on what makes musical "sense", for at a more extreme states of discrepancy, the groove falls apart.

As an "organising principle", the "grid" is not something that exists purely between musicians, but also unites them with their audience. Indeed, the audience's moving bodies (a common signifier of groove [Witek et al. 2014]) demonstrate that they, too, are attuned to the same "grid" as the musicians. As Roholt (2014, 108) argues, a listener's moving body is not *caused by* the rhythm, but is a mode of coming to know it, to "tune into" it. In this sense, the grid facilitates the audience's movements, while also constraining what "makes sense". The charged atmosphere of a concert stems from the clear, unspoken understanding that everyone in the room is attuned to the same event.[2]

Roholt (2014, 86–7) also suggests that pulses—and by extension, grids—can be "implicit" without actually being played. And he later (111–2) suggests that discrepancies (or "nuances") are felt primarily as a "disequilibrium", or a tension between what is expected (the pulse) and what is experienced (the discrepant beat). We could say, therefore, that this tension gives a sense of the music or grid "pushing back"—asserting its independence from the player's deliberate action, and emphasising the sense in which the invisible grid structures the perception and actions of all the players and listeners.

Hagberg (2016, 486–7) has noted the important, structuring role of implicit or "imaginary" music running underneath an improvisation. Discussing a 1961 performance by a John Coltrane trio, he describes the saxophone solo as a commentary on "an unheard piece on the other side of the sound", and the effect of the drummer's elision of a "momentarily unheard but still sensed" rhythm—what we have been calling the "grid". But it's important to stress that we use "grid" here as a shorthand; its presence is not dependent on musicians and audiences explicitly counting or reacting to *every* metrical beat. Indeed, in our primary experience, grids—especially in musical styles and cultures we are familiar with—are perceived pre-reflectively as what Maurice Merleau-

Ponty ([1942] 1983, 168) described as attractive or repulsive "forces", analogous to the affordances available to a football player moving across the field, whose opportunities and hindrances are constituted by the normative situation of the game. It is something we navigate by *inhabiting*, taking cues from the external world rather than via internalised, deliberative decision-making.

In just the same way, Roholt (2014, 108, 112) argues that our "grasp" of a groove involves using our body to find what Merleau-Ponty ([1945] 2012, 278–79) called an "optimal grip" on the groove and the sense in which it dances around the grid, offering different possibilities while curtailing others. The discrepancies between the groove and the grid may make it difficult to latch onto aurally, but by moving with it, the musician enters a dynamic relationship with the music:

> once the groove is constituted, the [musician's] task becomes easier; like driving a car in snow-grooves, he feels that there is some external force—in the music— guiding his movements and limbs. It is in this feeling of being guided that he feels as though he has been pulled into a musical notch. And the consequence of the musical notch is the easing of his task. (Roholt 2014, 112)

"The grid", then, describes a common centre of the music that unites its performers. The grid is present in a "virtual" sense. It is part of the music and plays a structural role even if it is never sounded in an actual sense. Its very intuitiveness and invisibility are what make it an "organising principle"—a clear exemplar of what we will explore below as an "emergent autonomous organisation"—with a certain independence from any of its individual performers. Even if the music stops altogether, there is a sense that the rhythm is still somehow "there", waiting to be picked up again (an effect frequently exploited by DJs, who use gaps in the rhythm to create tension on the dance floor).

For live musicians, there is a clear sense that the rhythm is "going somewhere", and that it "wants" to be a certain way. (This is not always a positive feeling; sometimes the only place the groove goes is in circles, and most improvisors can recall moments of getting "stuck" in a piece of music—of having their choices restrained to the point where they can come up with nothing that would make musical sense.)

Nevertheless, it is equally important to stress that the "grid" is not fixed and "in control" over-and-above the performers. As we will argue below, it represents one of a number of *participants* in a dynamic process that *influences* and is influenced *by* other agents.

3.2 Participatory Discrepancies

We have so far been discussing grooves and "grids" in purely metrical terms. This conception resonates with ethnomusicologist Charles Keil's account of groove as "participatory discrepancies" (1966, 1987, 1995).[3] Though coined in his article "Participatory Discrepancies and the Power of Music" (1987), the concept first appears in his critique (1966) of musicologist Leonard Meyer's emphasis on syntax and macrostructure (Meyer 1956). Simplistically put, Keil argues that groove, or "vital drive" (1966, 340–41), plays a central role in musical process in the majority of the world's traditions, and that its subtle and contingent dynamics play as important a role as the macro-

syntactical features that had been the main focus of Meyer, and indeed most musicology, at that time.

The term "participatory discrepancy" describes the sense of tension between an expectation and an experience that creates the unique *feel* we experience as groove. Keil initially focuses on aspects of expressive microtiming in jazz, especially the push-and-pull between a bassist's and a drummer's attacks "ahead of" or "behind" the beat, and the soloist's movement around this vector (1966). For Keil, such rhythmic tension is the elusive heart of swing, the "engendered feeling" (338) that invites listeners to move and so utterly escapes Meyer's analytical orientation toward the "unity of form and expression" traceable in written scores (338–339).

However, in his second article on participatory discrepancies (1987) Keil develops his account beyond the metric/rhythmic qualities of the music, generalising discrepant tension to include timbral and tonal qualities, among other parameters. His claim for the importance of performers' "semiconscious or unconscious slightly out of syncnesses" (275), previously focused on rhythm, becomes louder, broader, and more prescriptive: "Music, to be personally involving and socially valuable, must be 'out of time' and 'out of tune'" (275).

That is to say, Keil observes that what captivates us in music is the sense of tension it creates as it moves towards and away from a precision never fully achieved. For example, Keil applies the discrepancy concept to "the blended harmonics of two trumpets" (278) in a typical Chicago polka band. In this style, the trumpet section generally plays melodies in unison or tightly-voiced consonant harmonies in rhythmic unison, but whose tuning remains discreetly "off". This creates subtle acoustical "beating" patterns, or overtone interferences that are especially audible in a pair of like instruments. If only one trumpet were to play, any acoustical beating with timbrally-unlike instruments, such as clarinet or accordion, would be significantly less obvious. If three or more trumpets were to play, the complex array of beating patterns would make it difficult to identify interferences as discrepancies, and instead create a rich group sonority. But precisely the *pair* of trumpets, whose volume and colour stand out from the polka instrumentation, marks the style through its refined "out-of-tune-ness".

Keil's account of participatory discrepancies differs from the "grid" discussed above in his emphasis on the discrepancies between *performers*, rather than from some objective "mean". For Keil, centring the "grid" as a reference point would suggest a musical work that exists somehow independently of its creating-performers—precisely the kind of fixed "musical object" that he disavows in favour of a "process"-centred view.

Keil (1987) offers synonyms for participatory discrepancies—including "creative tensions" and "relaxed dynamisms" (275)—and therefore plants the seeds for expanding the concept from musical micro-features to a performance's relational phenomena. To the *rhythmic* category of participatory discrepancies he adds *textural* elements (timbre, sound, and tonal qualities) and *compositional voice* ("as arranged by") (275). For example, he treats as analogous acoustic phenomena (the "bright" and "happy" quality of two-trumpet lineups in polka bands described

above), style (the wild glissandi of Goral singing), and distributed creativity ("the sound of groups a, b, and c" in jazz),[4] insofar as each of these examples displays a form of discrepancy (278).

What links these diverse phenomena as *discrepancies* is the sense in which their enactment implies something that they are *not*, and that this is precisely what makes them recognisable as what they *are*. The concept of participatory discrepancies suggests that what is captivating in music lies not just in particular sounds but their *interaction*—and not just between the sound-producers themselves, but with the very sounds that emerge *between* them. But while Keil argued adamantly against the idea of a musical object that the concept of "grid" seems to invoke, the very idea of "discrepancy" nevertheless implies something "unheard" that the musical actions are discrepant *from*—something like a "centre of gravity" in physics which does not strictly-speaking exist, yet encapsulates very real effects.

In any case, Keil's emphasis on relationality highlights that whatever "grid"-like structures may lie between the musicians, they are not fixed "objects". Rather, they are emergent, temporal, relational phenomena, created by musicians' shared actions, even as those very actions respond to such phenomena "as if" it were independent. To get a better handle on how such an emergent "between" could exert real effects on musical agents, we will in the next section introduce the enactivist concept of "participatory sense-making".

4. Participatory Sense-Making

The idea that the transient, intangible event of music is not merely a *product* of musicians, but acts *on* them with a form of agency may at first glance appear counter-intuitive. But our discussion of the "grid" above gives some clue about how we might think about this. Even while what makes groove *groovy* is its discrepancy from the (implied but invisible) grid—thus emphasising the musicians' subtle responsive agency—it nevertheless simultaneously *constrains* what they can do. There is only so far a beat can be discrepant and still *make sense as a beat* in the context of the music.

This account aligns with the concept of "participatory sense-making", as articulated by the enactivist philosophers De Jaegher and Di Paolo (2007). Participatory sense-making describes how cognition comprises not only the action of an individual agent in its environment (the standard enactivist position), but also the *inter*-action of two (or more) agents around a shared object of concern. Since many cognitive actions involve multiple agents, De Jaegher and Di Paolo argue for understanding them as elements of a single dynamic system, who "couple" together as they make sense of an evolving situation in co-ordinated action[5] A simple example of such cognitive "coupling" is two strangers trying to pass one another on a busy street. Their brief interaction involves a range of gestures—including body position, eye movements, and so forth—that enable (or hinder) the pair in getting around one another.

When all is going well, such an interaction is so brief and effortless that neither agent really pays much attention to the other. But this by no means suggests that they are not participating with

one another—on the contrary, it shows just how sensitively each inhabits the shared physical and social environment of the bustling city sidewalk. In such a situation, we co-ordinate our body both with cues from the other (head and eye movements, for example) as well as the physical environment (fixed obstacles, gaps, and so forth). Yet in spite of ourselves, things sometimes go awry. Perhaps we misread the other, and instead of stepping around them, we turn the same way and "mirror" them. De Jaegher and Di Paolo (2007, 493) note that this position makes it more likely we will both turn and mirror the other *again*—that is, our normal way of interacting now works against us "in spite of, or rather because of, [our] efforts to break from this situation." The relational dynamics of the participants have formed an interaction ("mirroring") that functions autonomously of the beliefs and desires of the individuals involved, locking us into an awkward dance.

From this simple example, we can expand the participatory sense-making model to other forms of shared activity, which may be more or less extended over time—from a moment of smalltalk to a passionate debate—and more or less planned out—from waltzing in a ballroom to skanking in a dancehall. Of central importance to the concept of participatory sense-making is that the merging of agency during "coupling" involves not just the two participants and their environment, but the shared *interaction* in *between* them—i.e., the conversation or the dance.

De Jaegher and Di Paolo (2007, 493) describe the shared "in-between" phenomenon as an "emergent autonomous organisation" that participates in the action as something like an object, or even agent, in its own right. The "something like" is important, because there is no suggestion that the in-between is independently "conscious" in the ordinary sense, but rather emphasises how cognitive processes "ain't (all) in the head" (as Clark and Chalmers [1998, 8], famously put it). Cognition stems from action, and extends not only through the objects with which we interact, but also further into the dynamic spaces *between* us as well—which in turn *act on* us.

This conception describes the way that what is "between", by offering certain affordances, always constrains others. In a conversation, for example, I can't say two things at the same time.[6] I make a choice, but what I say will then influence how you respond, and (to a degree) limit the kind of things that you can say that will "make sense" in reply—which will of course then have the same effect on me. The conversation therefore takes "a life of its own" (Di Paolo, Cuffari, and De Jaegher 2018, 65–66; see also Goffman 1967, 113). It is a cumulative event that is more than the sum of its parts, and many of the best conversations end up far away from where either partner anticipated.

With Andrea Schiavio, De Jaegher has gone on to apply this thought directly to music, arguing that thinking of music as dynamic, participatory sense-making reveals

> the "musical object" not as a fixed and wholly pre-given structure, but rather as an emergent phenomenon that develops through shared active involvement in the musical event; the musical object is, by this light, an ongoing open structure that *shapes and is shaped by* the sensemakers *in a circular fashion*. (Schiavio and De Jaegher 2017, 34 [our emphasis])

"Musical object" here might most naturally be read as a finished "work" like a classical sonata or a pop song. As we saw above, the terms "work" and "object" tend to lead us toward thinking of music

in terms of a "product" of the musicians even as it guides them towards a more or less precise realisation. But as Benson (2003) and Cook (2013) point out, even a classical score always involves some degree of performer choice, as they interpret the score while adjusting to their co-performers. Likewise, the phenomenon of groove that we have been exploring—with its ongoing sense of participatory tension—shows how "object" here might better be phrased as "process" or "event" (McAuliffe 2022).

As an unfolding event, all music involves performer decisions or negotiation around particular parameters, what Bergamin (forthcoming) calls *provisos*, which act as (fluid) structures. The metrical "grid", as described above, offers an illustration of such a *proviso*, one that "shapes and is shaped by" the musical sense-makers. A similar role can be attributed to the key in Dixieland jazz or the *raag* in classical Hindustani improvisations, which facilitate the practice by enabling certain musical decisions and constraining others. In this context, Keil's insight, via his expanded concept of the participatory discrepancy, is to suggest that desired musical qualities arise in the spaces where musicians' decisions "rub up" against these implied (and otherwise invisible) *provisos*.

Pace Keil, this conception might nevertheless seem to continue to objectify such structures, in contrast to the "process" view he recommends. Yet, as Schuiling (2022, 329) notes, that "process" nevertheless shows up to musicians in a "thing"-like way. McAuliffe (2022) also notes that improvisors don't direct their attention explicitly to each others' actions so much as to the emergent music *between* them. He circumvents the object/process binary by arguing that both the music and performers are constituted by the musical *event*, "where the emergent work and the players comprise a single unity" (6). As in a conversation, the interaction creates a space in which subject(s) and work shape each other.

Di Paolo, Cuffari, and De Jaegher (2018) suggest that our bias of looking at emergent, participatory phenomena like music and language in objectified terms can be overcome by considering them *dialectically* (109). Our very method of analysing a piece of music, or a linguistic interaction, creates an illusion that we are dealing with a *thing* rather than a *process*. This dialectic process is often hidden to us by its everyday familiarity. We converse in our mother tongues, or play music in familiar styles, without much attention to how the interaction itself guides the decisions we make as we participate. As Bergamin (forthcoming, 11–18) notes, such decisions frequently aren't felt *as* decisions in the flow of improvised performance. Rather, the actions that show up as *possible* for a musician are *both* enabled and constrained by what he calls *provisos*. That is, the situated context of the performance (in terms of genre, materials, and constellation of performers with specific abilities and histories) will afford a much more limited range of choices that "make sense" than the "freedom" popularly associated with improvisation would suggest (see also Peters 2012, 5–6). Furthermore, musical *provisos* are *dynamic*—as in a conversation, each musical action alters the situation, referring to what came before and creating a pathway for what comes next. Groove offers a very clear example of such a dynamic *proviso*.

In the following section, we explore "groove" as an emergent musical phenomenon "in the wild", as it manifests in experimental improvised music, in order to more clearly see how it co-emerges

with the musical event. By approaching musical co-creation without pre-given parameters like metre or tonal key, improvisors raise interesting questions about *how* improvised musical decisions are made, and make more visible the act of musical sense-making as an unfolding negotiation between musicians and the event.

5. (Non-)groove in experimental improvised music

We have already seen how different musical styles and practices tolerate different degrees of discrepancy with regards to what makes musical sense. Such differences of degree can even occur within the same musical event. In a jazz trio observed by Doffman (2009), the rhythm section "locked" into a consistent groove (where the drum attack tended to anticipate the bass), while the guitarist experienced her solo as moving across that groove as a "wave" (142). Her report of "moving apart and together" with her bandmates was echoed in Doffman's musical analysis, which showed a fluid discrepancy in her relation to her bandmates.

Such fluidity, common to more contemporary forms of jazz and experimental musics, reveals additional layers of dynamism, emphasising that a groove is never simply a secondary grid "offset" by some fixed/regular discrepancy. Both groove and grid exist relationally, and the grid implied by "looser" grooves might have a "waviness" whose regularity is not overtly metronomic. Grooves and grids furthermore need not be stable, and some musics provide more space for different possible relationships to groove, including avoiding it altogether.

In experimental improvised music (EIM), for example, groove's role tends to be optional and/or highly contingent. EIM is not a tradition with codified rhythmic feels to the degree that, say, polka (see Keil 1987) or soul and funk (see Danielsen 2006) are. Rather, it is an aesthetically and geographically broad network of practices, some of which embrace groove sometimes, and others not. This can be traced in part to the radically diverse backgrounds of musicians, which include everything from jazz and sound art to DJ culture and Western and non-Western classical musics (see Fermont and Della Faille 2016; Lewis 1996, 112–13)—all of which themselves have different relationships to groove. The wide bandwidth of performer choice—with regard to how, what, and when to play in concrete performances as well as to longer-term questions of materials, tools, and partners—is another possible contributing factor to different approaches to groove across EIM communities.

In EIM, the entire performance is an ongoing negotiation. Often no musician is a clear leader, and where leader-follower relationships do emerge, they are chosen and reasserted with each new musical decision—both leader and follower usually have the possibility of "opting out" at any moment. This is not to say that musicians never (consciously or unconsciously) try to dominate or assert their will, but rather to emphasise that such assertions take place in a dynamic context, and that the final result depends on the combined choices of the entire ensemble.[7]

This sense of negotiation resists the myth that EIM is *totally* free. Much like in a conversation—where one is always technically free to change the subject, or even not to respond at all—there are

multiple but ultimately a finite number of things one can say that will make sense in a given context. In EIM, the bandwidth of choice may be broader than in more traditionally-structured improvisations, but constraints are nevertheless imposed by the musicians' materials, skills, and the norms of their scene(s). Where EIM differs, perhaps, is in the degree to which the norms *themselves* are often up for negotiation during the performance. Whether or not a piece "works" will depend on all of these factors, and it is not uncommon for a piece to "work" or "make sense" to one performer/listener and not to another, or vice versa.[8]

How, then, might groove appear in EIM? Indeed, there are as many answers to this question as there are performances, or even moments within performances. To take one example, pianist and bandleader Cecil Taylor, recognised as one of the pioneers of free jazz, largely "dispensed with bars, time signatures" after the mid-1960s (Felver 2005, 31:38). In ensemble recordings such as *Conquistador!* (1968), one can hear "metastable" grooves,[9] or dynamic rhythmic textures on the edge of groove within a range of (ir)regularity. Here, individual players seem to play neither a steady pulse nor a steady meter. Nevertheless, the band forms a rhythmically tight unit through constant motivic interaction and sectional changes of tempo and density. Time feels are often, though not always, anchored in the driving energy of the bass and drums and Taylor's non-repetitive syncopations. Players also approach a shared pulse during occasional appearances of precomposed material. Recalling the "moving apart and together" reported by Doffman (2009) above, Ekkehard Jost describes these rhythmic phenomena as

> chains of impulses whose links, though they may be of irregular length, do suggest a dynamic order. That order can perhaps best be visualized if we compare the beat of traditional jazz to walking, or to the even strides of a long-distance runner; while the rhythm of the Cecil Taylor group is like the alternating strides and leaps of a hurdler, with the hurdles places at unequal intervals. (Jost 1994, 72)

Guitarist Derek Bailey and Butoh dancer Min Tanaka illustrate a different approach in *Mountain Stage* (Bailey and Tanaka 1993), a live outdoor performance in which they tend even further away from conventional groove. Silence and stillness play a significant role; there is no "rhythm section" other than masses of insects in the background. Rhythmic interaction revolves largely around non-repetitive movement in loose counterpoint. Bailey may punctuate Tanaka's irregular phrases; Tanaka may plant slower, lyrical material in Bailey's metastable "beds". However, a number of extended moments with a strong shared, regular pulse do emerge.[10] These often begin with an offer: out of irregular textures, one performer repeats a figure, and the other adapts. These momentary grooves ebb, flow, and disappear as unpredictably as they arise. They are striking not only in their contrast to the predominantly non-groovy material in the rest of the performance, but also in their suggestion of constant rhythmic synchrony below the seemingly disjointed surface.

Groove in EIM can also occur without the explicit participation of an entire group. This is particularly true of larger ensembles; greater numbers of players and the physical distance between them afford relative independence of sub-groupings and textural layers. In the next section, for example, we analyse the development of a groove within a performance by the Splitter Orchester, a Berlin-based 21-piece contemporary improvising ensemble.[11] In the video excerpt that we present, we

will hear an emergent groove propagate across various individual musicians even as other co-performers refrain from directly engaging with it, continuing instead to contribute different layers of musical material. However, we shall note how the groove nevertheless structures how we *hear* the performance even of those musicians who do not directly participate, thereby emphasising the autonomy of groove both in its independence from individual performers and in its effects on listeners.

 In all of these examples groove remains a contingent possibility, whose terms, duration, dynamics, and feel are not given *a priori*, but rather cohere through participation. In contrast to many other improvised (and non-improvised) musics, groove in experimental improvised music can be initiated by any participant or participants, at indeterminate moments, rather than being counted off by a band leader, or given by a stylistic convention or work.

6. Exploring Emergence through Artistic Research

In what follows, we present an example of groove as an "organising principle" as it emerged during a performance by the Splitter Orchester. The recording was made during a public concert as part of *(Musical) Ethics Lab 2*—the second of seven artistic research encounters exploring ethical questions in and around musical practice. The Lab format comprised a weeklong workshop followed by public presentations and discussions.

The workshop centred on a series of *interventions*: concepts, exercises, scores, and kits for pieces that served to focus attention on particular musico-ethical themes. These themes included musicians' divergent habits and resources, problems of listening across physical distance, and the role of judgement in musicians' entrances and exits of an ongoing piece (Williams 2022; forthcoming). Discussion around interventions among musicians and with researchers during rehearsals both steered the evolution of the workshop and provided a focus of participant observation.

Throughout the week, Bergamin conducted one-on-one "phenomenological interviews" with most ensemble members (see Bergamin forthcoming). These comprised in-depth, semi-structured conversations that worked with musicians to articulate their *experience* of improvising, aiming towards rich descriptions of the shifting modes of attention and agency, and subtle cues which guide a musician's performance (see also Høffding and Martiny 2016; Høffding and Snekkestad 2021). Descriptions were later transcribed, phenomenologically analysed, and tagged by theme. "Groove" was a recurring theme across interviews, as well as across Labs. These interviews have thus informed our discussion here, even though—beyond occasional quotes—we have not drawn on them explicitly in this article.[12]

This interdisciplinary approach creates a virtuous circle between theory and practice, allowing topics that arise in the practice to inform the theory, which can then be fed back into practice through discussions and musical interventions. Experimental improvised music is well suited to this form of artistic research, as it typically presupposes a minimum of pre-given parameters

(*provisos*) in comparison to other improvising styles. For example, a performer is not expected to adhere to a specific *tal*, as in North Indian improvisations, or to respect a traditional bowing technique, as a Scottish folk fiddler might.

Of course, as Currie (2016) notes, EIM scenes are constituted by their own (often tacit) expectations. So-called "non-idiomatic" styles have a tendency to develop idioms of their own, often defined more by an active *refusal* of the structural *provisos* common to other improvising idioms, than by a freedom to do "anything. [13] Furthermore, Banerji (2021) notes that a tendency to treat "transatlantic" (Currie 2016) or "eurological" (Lewis 1996) improvisation as somehow capturing the "essence" of improvisation more broadly carries problematic overtones, echoing a Eurocentrism that sees itself as the "default" against which other cultural practices are measured. For this reason, we stress that we are working with *experimental* improvised music—a distinct and contingent practice—rather than "improvised music" writ large.

All the same, in the Lab context, the sense in which a minimum of *provisos* are presumed in this practice means that the structures of any particular piece are always in question, and can be focused on as and when they arise. In this sense, the "experimental" in experimental improvised music approaches its scientific (*geisteswissenschaftlich*) sense, since the active interrogation of musical parameters and materials has the advantage of making emergent structures—precisely because they are contingent—more visible when they *do* emerge.

As mentioned above, in the case of the Splitter Orchester, groove is not an expectation (and indeed, in the band's history—as in the so-called "Berlin reductionist" scene from which they arose—it was, if not explicitly forbidden, at least tacitly discouraged [Blažanović 2011]). Yet Splitter includes members who have an active interest in rhythm and grooves, and at the time of the Labs the band was more open to incorporating groove into its improvisations. Thus, when grooves *did* arise, they retained an open and contingent quality that we argue more explicitly underlines the autonomous sense of "agency" that groove brings to *all* improvised styles.

6.1 Analysis: Splitter

Take for example Figure 1, which is an excerpt from Splitter's public concert at the end of *(Musical) Ethics Lab 2*. The piece was a "free" improvisation in the sense that the only explicitly pre-agreed parameter was that the ensemble would play a single, continuous piece for the duration of the set (about 30–40 minutes), although the music that resulted was of course influenced by the interventions, discussions, and experiences of the preceding week.

Figure 1: Splitter Orchester, Musical Ethics Lab 2 *(excerpt).* *https://vimeo.com/1038525438*

At the beginning of the clip, we notice the first hints of a groove when keyboardist Magda Mayas introduces a repeated low C# in her left hand and an "upbeat" chord in her right hand within a steady tempo. In this otherwise non-groovy context, one can hear the pattern as an offer, comparable to groovy moments in *Mountain Stage*; other musicians may or may not join in. A sense of a grid emerges, a pulse with a therefore latent potential for groove, even if there is none there yet. The fact that the offer is not immediately accepted by the whole band reveals participatory discrepancies at the level of form. This "compositional discrepancy", so to speak, is a widespread, perhaps inherent, feature of EIM. If performers decide during performance when to play, form is bound to be a consequence of discrepant values, perceptions, and expectations (Canonne and Garnier 2015). Groups with long collective performance histories may, through habit or deliberate training, sharpen a shared sense of when sectional changes (could or should) occur and thus react more quickly to such offers. Nonetheless, the possibility of a groove here is held in suspense for at least 20 seconds before any musicians accept.

At 0:40, drummer Steve Heather starts playing "around" Mayas' regular pulse. On their own, Heather's figures are not exactly groovy—they are discrepant from the pulse, or "out of time", in a way that pianist Thelonious Monk's right hand often is from his left (see Iyer 2002, 407–9). On closer

inspection, Mayas' initial offer is also less regular than it may have first appeared. Though her tempo and pulse are steady, the metrical grouping of alternating C#s and dyads is ambiguous; there doesn't seem to be any clear "one"-beat. Her use of the volume pedal makes the stream continuously louder or softer, swelling over shorter and longer phases. Other musicians are thus likely to feel different emphases in this emerging groove, rather than a common downbeat; Mayas' approach to dynamics invites participatory discrepancies at the level of metre.

And yet, Heather and Mayas come to make rhythmic sense. The "grid" here is more of a "wave", a metastability. Mayas' *ostinato* provides the impulse, but over time, she seems neither to play to the others, nor they to her—rather, the duo plays to something in between their individual contributions. This "emergent autonomous organisation" is clearly perceivable beyond the two participants. The trombonist in the middle of the stage, Matthias Müller, begins to bob his head in time as the groove coalesces, although he does not participate in it through sound.

Cellist Anthea Caddy enters at 0:55. Percussive flurries with the wood of her bow on the body of her instrument are timbrally and spatially proximate to Heather's rimshots, accenting the rhythmic coupling of Heather to Mayas. Despite being even further "out of time" with respect to Mayas' pulse than Heather, Caddy consolidates the groovy moment, ipso facto expanding the duo to a trio. The groove continues when Mayas temporarily reduces her volume below the threshold of audibility and only the percussive clatter of Heather and Caddy remains. That is, the "wavy grid" persists even as nobody plays directly "on" it. In fact, it holds the trio together exactly *because* no single musician is "on" it. Like a "centre of gravity", it is both imaginary yet real in its effects. It is not simply implied by the decisions of the three individuals, but structures and constrains them as well, as something they *feel* together and maintain a connection to in its ongoing production.

At the same, a structurally similar but non-groovy centre of gravity gathers musicians outside the grooving trio of Magdas, Heather, and Caddy. The dominant texture elsewhere in the band—present from the beginning of the excerpt—consists of high-pitched sustained tones including bowed cymbals, electronics, pinched trumpet notes, violin, clarinet, and stroked Tibetan singing bowls. This drone cluster constitutes its own kind of parallel organising principle within the group. Individuals enter and leave the drone, but the sustained texture persists; nearly all the musicians playing at any given moment in this excerpt belong to one centre of gravity or the other.

After Caddy enters, Heather introduces occasional irregular cymbal and snare drum accents; Mayas begins to put more weight on the dyad in her right hand, blurring its previous "upbeat" quality with respect to the now quieter low C#s in her left. Occasional sharp accents on the dyad echo Heather's snare hits; as they pop out of the texture, these gestures add an additional layer of complexity to the groove. As this complexity and textural density increase, the pulse loses force and the band gets louder. When Mayas fades out around 2:40, the groove appears to have run its course.

Or does it? At 3:05, Müller sounds his trombone after minutes of silent kinetic complicity. The tempo of his repeated growling gesture approximates that of the trio groove, suggesting a continuation. This moment is noteworthy for how it encapsulates the systemic coupling of the

musicians and the groove—and thus the sense-making process they comprise. On the one hand, Müller offers to extend the groove into a new section, as Mayas did at the beginning of the clip. The potential is there for anyone in the band to join Müller in a direct continuation of the earlier pulsing movement. Caddy appears to take up the offer, briefly joining with semi-regular left-hand pizzicato punctuations on low open cello strings. The pulse, almost inaudible, never clearly ceases. On the other hand, the groove *itself* passes from the trio to Müller and then back to Caddy over time and space; it persists as an entity over and above the actions of the individuals participating within it. This moment recalls the persistence of the earlier groove between Heather and Caddy during Mayas' momentary disappearances through the use of her volume pedal.

Furthermore, it highlights the role of another agent in this emergent mesh of participatory discrepancies: the listener(s). As we listen to this music evolve over three minutes, we hear something rather different from outside the ensemble than the musicians did on stage. This is partly a question of acoustic perspective. Musicians work with what is audible from their unique position in an evolving sound mass at any given moment, whereas audiences have an overview made possible by concert hall architecture and audio postproduction. But it is also a question of structural affordances. When a groove appears—even among a relatively small subsection of musicians (three to four in an ensemble of twenty-one)—it draws us in. We are predisposed to listen in the groove,[14] to accept it with our entire bodies as an organising principle for the rest of the mostly non-groovy musical activity. Meelberg (2011) has even gone so far as to characterise groove as "a sonic intrusion that makes use of the vulnerability of the listeners' and performers' bodies". In other words, the groove acts on us, too, suggesting certain possibilities and constraining others.

That is to say, the dynamic sense-making situation does not merely gather together the musicians with the music, but also the audience. The music makes claims on its hearers; certain features, like a pulse or groove call attention to themselves and structure the experience.[15] But audiences—as participatory sense-makers too—are not merely passive experiencers. Active listening may take many forms, depending on the context of the performance—from aurally exploring the subtleties of the music (as in most classical or EIM contexts), to cheering the musicians on (as in a jazz or blues club), to singing or dancing along (as at a rock concert or an electronic dance music festival). In every case, the audience are themselves drawn integrally into the dynamic musical event, with a freedom to respond that is nevertheless constrained by the ways that *make sense* within the musical context and norms of the "scene".[16] Certain features of the music will "pop out" as more salient to the listener, and while many of these will depend on the listener's own prior experience and training, others—such as Splitter's groove—assert themselves more prominently. While the listener can focus their attention to greater or lesser degrees, they cannot *choose* what they hear. In group improvisation, the performers, too, hear the music and its possibilities in the light of their experience, and can only choose *how* they respond, calling dialectically on their co-performers to respond again.

Where scholars of improvisation have frequently stressed the space it gives to individual freedom (Watson 2004; Corbett 2016; see also Banerji 2018), our account brings into question the role of

performer *choice*, amid larger questions of freedom, agency, and decision-making. An enactive understanding pushes beyond questions of a performer's "will," into a richer account of how the space of possible musical actions is always constrained by its situated context, as well as how—rather than simply "restricting" freedom—such constraints are the generative pre-condition of musicking *per se*. Generative constraints include what Bergamin (forthcoming), cited above, calls *provisos*. For example, material provisos (e.g., the shape of an instrument) enable a finite range of sounds while facilitating particular movements and musical gestures; musical provisos (e.g., musical keys or time signatures) offer normative limits for which sounds can be played and when. In both cases, provisos function both as constraints on performer choice while at the same time as the enabling condition for participating in a particular style or musical culture.

But we also saw that provisos are dynamic, and in improvisation, the need to make sense *of* and *with* the music becomes a higher order constraint. In "freer" styles—where norms around instrumental technique and musical parameters are more relaxed or even actively challenged—the role of interpersonal sense-making becomes even more pronounced. Processes of active sense-making take place not just between musicians—who respond to one another—but with audiences as well, whose appreciation comes through sensitivity to the sonic and social dynamics of the performance. "Success" in improvisation is not a case of conforming accurately to a score, but in being *understood* in a hermeneutic sense (McAuliffe 2023)—that is, in entering together with one's co-performers/listeners into a shared field of meaning.

Gary Peters (2012) even claims that experimental improvisation, perhaps counter-intuitively, is rarely *truly* surprising, since to act within a particular social milieu is in a sense to accept the implicit boundaries that structure and communicate meaning. In essence, to perform is to implicitly accept the limits on choice that enable a performer to conform to the situation, such that their actions can be understood *as* a performance by the audience. Even a wildly unconventional performance—say, screaming swearwords and dismantling one's instrument—is nevertheless (usually) framed and legitimised by the context of a performance space (the same actions performed alone in a public park would elicit a very different reaction from most witnesses).

Thus, as with a conversation, sense-making is constrained not just by the shared, structural provisos (grammar, vocabulary) that are the condition for conversing in the first place, but also by the unfolding context of the conversation, which is situated in a broader form-of-life even as it evolves and "wanders" with a "life of its own." Likewise, as improvising musicians perform together, their actions are both facilitated and constrained not only by socio-material provisos, but by emergent features (such as grooves) that operate with a degree of autonomy from the will of any individual performer. Thus we see that—on both the individual as well as the interpersonal ensemble level—improvisors are far from "free to do anything," but are always channelled, guided, and in tension with the broader dynamic in which they are participating.

Of course, this does not imply that individual agency plays *no* role, but only that sense-making is an intersubjective activity that is distributed across people, materials, spaces, and the music itself.

In our example of experimental improvised music, a player isn't *obliged* to join or continue with any groove that emerges. But at the same time, the structuring role of groove does mean that "dropping out" of or playing "against" a groove will nevertheless be heard *in contrast* to it, regardless of the specific wishes or intentions of that individual. The autonomy of groove, as an organising principle, means that it continues to structure the space of musical choices even across changes of personnel. While this much may be intuitive in overtly "groovy" musical styles, our analysis has shown a similar effect in an ostensibly "free" performance of experimental improvised music, with consequences for how we think about agency and choice in improvisation overall.

7. Conclusion

In this article we have explored musical sense-making both in theory and in the practice of musical improvisation. Centred on the example of "groove", we have looked at how what is most captivating in music are the particular subtleties and discrepancies that occur *between* musicians, and that imply a shared consciousness bound by an implicit structuring form, or what we initially called "the grid". Like a centre-of-gravity, a "grid" is both imaginary and yet has very real effects that enable and constrain musical possibilities within a particular social context. But taking a cue from Keil, we avoided the objectifying implications of this picture by emphasising its emergent dynamism, suggesting that many musical parameters (beyond rhythm, including timbral and other qualities) that function in this way are by no means fixed, and are constantly asserted anew as part of an ongoing, dialectical interpretation between participants.

This picture, we argued, aligns with the enactivist theory of "participatory sense-making", in which multiple agents are coupled together around an "emergent autonomous organisation" that responds to its creators with a sense of agency that is itself constituted by the normative structures of the event. We suggested that groove is an exemplar of this "autonomous" organisation within music, constraining certain decisions while enabling others as it holds together its various participants like a rhythmic centre of gravity.

We then sought to show this process in action, taking experimental improvised music as our medium. EIM's deliberate paucity of explicitly agreed-upon parameters means that the process of sense-making—present in all music—becomes especially overt. When a phenomenon like groove *does* emerge, its contingency and autonomy remain close to the surface. In our example with the Splitter Orchester, we saw a distinct groove arise through the action of multiple musicians, centred on an evolving and sometimes unheard pulse that belonged to everyone and no one, transmitted both temporally and spatially across the ensemble. From our privileged position as listeners, it also became clear how this emergent, unsteady groove structured the interpretation of the overall musical event, both while it was grooving and after it faded.

While groove is just one of the ways we make music, and music is just one of the ways we make sense of human life, our example here suggests a very concrete sense of how sense-making is an active, externalised process that involves not just other people, but the other-than-human

elements that emerge *between* us. Or perhaps more accurately, sense-making is a collective process of which our individual will and actions play just a part, being always structured by the inherited norms we bring to the situation. But importantly, for all the power of these norms, they are not fixed, being themselves both the condition and result of the same unfolding process.

Acknowledgements

Notes

[1] For example, many of the musicians we worked with in this project frequently spoke of music having a form of "agency".

> Robin Hayward (Splitter Orchester): "Phil Wachsmann [of the London Jazz Composers Orchestra] used to talk about how the music starts to play itself.… The feeling is the music's playing itself, you're not playing the music anymore.… And that's what I meant when I said I'm part of the interactive system."

> Roy Carroll (Splitter Orchester): "It's almost like [the music] starts happening by itself, and then you notice it, and then you have to decide what to do with it."

[2] While conversely, the sense that *not* everybody is attuned can have the opposite effect; even the most technically excellent music can feel flat in the face of a distracted or disinterested audience.

[3] However, Keil's own notion of participatory discrepancies was subtle and evolved over time, and it is unlikely he would fully agree with the "grid" concept that is implied by later authors.

[4] The word "sound" here refers to a group's intersubjective musical identity, and involves several different factors. A key one is timbre: how musicians balance and blend the their individual instruments in a room. But technical and acoustic parameters in single performances are just the beginning. As musicians play together over time, they develop unique collective histories, habits, repertoires, and styles of "conversational interplay" (Berliner 2009, 390). Participatory discrepancies between performers recur as they develop habits of responding to the music together, creating a recognizable whole that is experienced as the unique character or "sound" of a particular band or ensemble.

[5] "Co-ordination" here does not necessarily imply "co-operation". A dog and a rabbit can be locked in a single activity—"the chase"—where the actions of each creates affordances and hindrances that the other must react to in their pursuit of very different goals.

[6] Although I *can* say one thing while my tone or body language imply I mean something else. Such cases only accentuate the multiple cues and interactive nature of sense-making, but a simpler, everyday conversation will suffice as an example here.

[7] These dynamics are of course always present *in potentia* in more traditional bands, with the key difference being that participation and roles are largely decided in advance of the performance, and going on stage implies agreement.

[8] For an illustrative discussion of normativity and sense-making in experimental improvised music, see our recent audio essay (Williams and Bergamin 2025).

[9] See Gilbert Simondon (2020) for more on the concept of "metastability". Thanks to Scott McLaughlin for bringing to our attention the relevance of this notion to music.

[10] Three examples include 17:50–18:50, 21:00–23:10, 29:44–30:25 (Bailey and Tanaka 1993).

[11] At the time of performance. In contrast to many improvising ensembles and collectives, Splitter has a relatively stable lineup, although there have been several comings and goings since the band's founding in 2010.

[12] But see Bergamin (2024, 43–5) for a hermeneutic discussion of rhythm informed by an earlier Lab, and Bergamin (forthcoming) for a more extended phenomenological treatment of EIM.

[13] Currie (2016, 8 n.5) cites the well-known anecdote by Ian Carr (1971, 41), about a saxophonist "blackballed" from a free jazz session for playing a music-hall tune, of which Carr noted "you can play anything, but you can't play just anything."

[14] Whether by nature or culture—or both—is an open question (Clayton, Sager, and Will 2005), but makes no difference here.

[15] And indeed, musicians in EIM will often actively train themselves to resist the "natural" pull of a pulse, out of a concern to avoid "obvious" or unconscious musical decisions.

[16] There is, of course, a strong asymmetry in the audience's influence on the music with respect to the musicians, although this also varies by context. Classical or EIM audiences—typically expected to listen in silence—can exert very little influence on the sound production, compared with a jazz or EDM crowd whose active responses can push the band/DJ to take certain decisions or not.

Works Cited

Bailey, Derek, and Min Tanaka, dirs. 1993. *Mountain Stage*. VHS. Incus. Uploaded to Youtube 1 June, 2022. https://www.youtube.com/watch?v=DH6MQFHYc4c.

Banerji, Ritwik. 2018. "Phenomenologies of Egalitarianism in Free Improvisation: A Virtual Performer Meets Its Critics." PhD diss., University of California, Berkeley.

Banerji, Ritwik. 2021. "Whiteness as Improvisation, Nonwhiteness as Machine." *Jazz and Culture* 4 (2): 56–84. https://doi.org/10.5406/jazzculture.4.2.0056.

Benson, Bruce. 2003. *The Improvisation of Musical Dialogue: A Phenomenology of Music*. Cambridge University Press. https://doi.org/10.1017/CBO9780511615924.

Bergamin, Joshua A. 2024. "The Participant Belongs to the Play: The Ethical Dimensions of Improvised Music." In *Gadamer, Music, and Philosophical Hermeneutics*, edited by Sam McAuliffe, 31–50. Springer. https://doi.org/10.1007/978-3-031-41570-8.

Bergamin, Joshua A. forthcoming. "Habitually Breaking Habits: Agency, Awareness, and Decision-Making in Musical Improvisation." *Phenomenology and the Cognitive Sciences*. https://doi.org/10.1007/s11097-024-09974-x.

Berliner, Paul F. 2009. *Thinking in Jazz: The Infinite Art of Improvisation*. University of Chicago Press.

Blažanović, Marta. 2011. "Social History of the Echtzeitmusik Scene in Berlin." In *Echtzeitmusik Berlin: Self-Defining a Scene*, edited by Burkhard Beins, Christian Kesten, Gisela Nauck, and Andrea Neumann, 29–34. Wolke Verlag.

Borgo, David. 2014. "What the Music Wants." In *Soundweaving: Writings on Improvisation*, edited by Franziska Schroeder and Micheal Ó'hAodha, 33–52. Cambridge Scholars Publishing.

Butterfield, Matthew. 2010. "Participatory Discrepancies and the Perception of Beats in Jazz." *Music Perception: An Interdisciplinary Journal* 27 (3): 157–76. https://doi.org/10.1525/mp.2010.27.3.157.

Canonne, Clément, and Nicolas Garnier. 2015. "Individual Decisions and Perceived Form in Collective Free Improvisation." *Journal of New Music Research* 44 (2): 145–67. https://doi.org/10.1080/09298215.2015.1061564.

Carr, Ian. 1971. "Freedom and Fish Soup." *Melody Maker* 22 (May): 41.

Clark, Andy, and David Chalmers. 1998. "The Extended Mind." *Analysis* 58 (1): 7–19. https://doi.org/10.1093/analys/58.1.7.

Clarke, E., M. Doffman, and L. Lim. 2013. "Distributed Creativity and Ecological Dynamics: A Case Study of Liza Lim's 'Tongue of the Invisible.'" *Music and Letters* 94 (4): 628–63. https://doi.org/10.1093/ml/gct118.

Clayton, Martin, Rebecca Sager, and Udo Will. 2005. "In Time with the Music: The Concept of Entrainment and Its Significance for Ethnomusicology." *European Meetings in Ethnomusicology* 11:1–82.

Cobussen, Marcel. 2017. *The Field of Musical Improvisation*. Leiden University Press.

Cook, Nicholas. 2013. *Beyond the Score: Music as Performance*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199357406.001.0001.

Cook, Nicholas. 2017. "Scripting Social Interaction: Improvisation, Performance, and Western 'Art' Music." In *Improvisation and Social Aesthetics*, edited by Georgina Born, Will Straw, and Eric Lewis, 59–77. Duke University Press.

Corbett, John. 2016. *A Listener's Guide to Free Improvisation*. University of Chicago Press. https://doi.org/10.7208/chicago/9780226347462.001.0001.

Currie, Scott. 2016. "The Other Side of Here and Now: Cross-Cultural Reflections on the Politics of Improvisation Studies." *Critical Studies in Improvisation* 11 (1–2): 1–10.

Danielsen, Anne. 2006. *Presence and Pleasure: The Funk Grooves of James Brown and Parliament*. Wesleyan University Press. https://doi.org/10.1353/book.125990.

De Jaegher, Hanne, and Ezequiel Di Paolo. 2007. "Participatory Sense-Making: An Enactive Approach to Social Cognition." *Phenomenology and the Cognitive Sciences* 6 (4): 485–507. https://doi.org/10.1007/s11097-007-9076-9.

Di Paolo, Ezequiel A., Elena Clare Cuffari, and Hanne De Jaegher. 2018. *Linguistic Bodies: The Continuity between Life and Language*. MIT Press. https://doi.org/10.7551/mitpress/11244.001.0001.

Doffman, Mark. 2009. "Making It Groove! Entrainment, Participation and Discrepancy in the 'Conversation' of a Jazz Trio." *Language & History* 52 (1): 130–47. https://doi.org/10.1179/175975309X452012.

Felver, Christopher, dir. 2005. *Cecil Taylor: All the Notes*. Filmhub.

Fermont, Cedrik, and Dimitri Della Faille. 2016. *Not Your World Music: Noise in South East Asia: Art, Politics, Identity, Gender and Global Capitalism*. Syrphe.

Goffman, Erving. 1967. *Interaction Ritual: Essays on Face-to-Face Behavior*. Penguin.

Hagberg, Garry L. 2016. "Ensemble Improvisation, Collective Intention, and Group Attention." In *The Oxford Handbook of Critical Improvisation Studies*, edited by George E. Lewis and Benjamin Piekut, 1:481–99: Oxford University Press.

Høffding, Simon, and Kristian Martiny. 2016. "Framing a Phenomenological Interview: What, Why and How." *Phenomenology and the Cognitive Sciences* 15 (4): 539–64. https://doi.org/10.1007/s11097-015-9433-z.

Høffding, Simon, and Andrea Schiavio. 2021. "Exploratory Expertise and the Dual Intentionality of Music-Making." *Phenomenology and the Cognitive Sciences* 20: 811–29. https://doi.org/10.1007/s11097-019-09626-5.

Høffding, Simon, and Torben Snekkestad. 2021. "Inner and Outer Ears: Enacting Agential Systems in Music Improvisation." In *Philosophy of Improvisation: Interdisciplinary Perspectives on Theory and Practice*, edited by Susanne Ravn, Simon Høffding, and James McGuirk, 161–82. Routledge. https://doi.org/10.4324/9781003090076-13.

Iyer, Vijay. 2002. "Embodied Mind, Situated Cognition, and Expressive Microtiming in African-American Music." *Music Perception* 19 (3): 387–414. https://doi.org/10.1525/mp.2002.19.3.387.

Janata, Petr, Stefan T. Tomic, and Jason M. Haberman. 2012. "Sensorimotor Coupling in Music and the Psychology of the Groove." *Journal of Experimental Psychology: General* 141 (1): 54–75. https://doi.org/10.1037/a0024208.

Jost, Ekkehard. 1994. *Free Jazz*. Da Capo Press.

Keil, Charles. 1966. "Motion and Feeling Through Music." *Journal of Aesthetics and Art Criticism* 24 (3): 337–49. https://doi.org/10.2307/427969.

Keil, Charles. 1987. "Participatory Discrepancies and the Power of Music." *Cultural Anthropology* 2 (3): 275–83. https://doi.org/10.1525/can.1987.2.3.02a00010.

Keil, Charles. 1995. "The Theory of Participatory Discrepancies: A Progress Report." *Ethnomusicology* 39 (1): 1–19. https://doi.org/10.2307/852198.

Krueger, Joel W. 2009. "Enacting Musical Experience." *Journal of Consciousness Studies* 16 (2–3): 98–123.

Krueger, Joel W. 2011. "Doing Things with Music." *Phenomenology and the Cognitive Sciences* 10 (1): 1–22. https://doi.org/10.1007/s11097-010-9152-4.

Lewis, George E. 1996. "Improvised Music after 1950: Afrological and Eurological Perspectives." *Black Music Research Journal* 16 (1): 91–122. https://doi.org/10.2307/779379.

Madison, Guy. 2006. "Experiencing Groove Induced by Music: Consistency and Phenomenology." *Music Perception* 24 (2): 201–8. https://doi.org/10.1525/mp.2006.24.2.201.

McAuliffe, Sam. 2022. "The Inseparability of Player(s) and Artwork in Improvised Musical Performance." *Critical Studies in Improvisation* 15 (1): 1–11. https://doi.org/10.21083/csieci.v15i1.5408.

McAuliffe, Sam. 2023. *Improvisation in Music and Philosophical Hermeneutics*. London: Bloomsbury Academic. https://doi.org/10.5040/9781350338043.

Meelberg, Vincent. 2011. "Moving to Become Better: The Embodied Performance of Musical Groove." *Journal for Artistic Research*, no. 1. https://www.researchcatalogue.net/view/11612/11613.

Merleau-Ponty, Maurice. (1942) 1983. *The Structure of Behavior*. Translated by Alden L. Fisher. Duquesne University Press.

Merleau-Ponty, Maurice. (1945) 2012. *Phenomenology of Perception*. Translated by Donald Landes. Routledge.

Meyer, Leonard B. 1956. *Emotion and Meaning in Music*. University of Chicago Press.

Peters, Gary. 2012. "Certainty, Contingency, and Improvisation." *Critical Studies in Improvisation* 8 (2). https://doi.org/10.21083/csieci.v8i2.2141.

Roholt, Tiger C. 2014. *Groove: A Phenomenology of Rhythmic Nuance*. Bloomsbury.

Schiavio, Andrea, and Hanne De Jaegher. 2017. "Participatory Sense-Making in Joint Musical Practice." In *The Routledge Companion to Embodied Music Interaction*, edited by Micheline Lesaffre, Pieter-Jan Maes, and Marc Leman, 31–39. Routledge. https://doi.org/10.4324/9781315621364-4.

Schuiling, Floris. 2022. "Music As Extended Agency: On Notation And Entextualization In Improvised Music." *Music and Letters* 103 (2): 322–43. https://doi.org/10.1093/ml/gcab109.

Simondon, Gilbert. 2020. *Individuation in Light of Notions of Form and Information*. Translated by Taylor Adkins. University of Minnesota Press.

Small, Christopher. 1998. *Musicking: The Meanings of Performing and Listening*. Wesleyan University Press.

Solli, Mattias, and Thomas Netland. 2021. "Enacting a Jazz Beat: Temporality in Sonic Environment and Symbolic Communication." *The British Journal of Aesthetics* 61 (4): 485–504. https://doi.org/10.1093/aesthj/ayab048.

Taylor, Cecil. 1968. *Conquistador!* LP. New York: Blue Note.

Watson, Ben. 2004. *Derek Bailey and the Story of Free Improvisation*. Verso.

Wheeler, Michael. 2018. "Talking about More than Heads: The Embodied, Embedded and Extended Creative Mind." In *Creativity and Philosophy*, by Gaut Berys and Kieran Matthew, edited by Berys Gaut and Matthew Kieran, 230–50. Routledge. https://doi.org/10.4324/9781351199797-14.

Williams, Christopher A. 2022. "Composing with (Improvising) People: A Paramanifesto." In *Wien Modern 35 Festivalkatalog. Essays.*, 2:159–64. Wien Modern, Verein für neue Musik.

Williams, Christopher A. Forthcoming. *Noise of the Spheres: On ((Experimental) Improvised) Music and Ethics*. Bloomsbury.

Williams, Christopher A., and Bergamin, Joshua. 2025. "Real-Time Norms: Grooves, Drones, and Sense-Making in Experimental Improvised Music." *Seismograf Peer*. https://doi.org/10.48233/50.

Witek, Maria A. G. 2017. "Filling In: Syncopation, Pleasure and Distributed Embodiment in Groove." *Music Analysis* 36 (1): 138–60. https://doi.org/10.1111/musa.12082.

Witek, Maria A. G., Eric F. Clarke, Mikkel Wallentin, Morten L. Kringelbach, and Peter Vuust. 2014. "Syncopation, Body-Movement and Pleasure in Groove Music." Edited by Rouwen Canal-Bruland. *PLoS ONE* 9 (4): e94446. https://doi.org/10.1371/journal.pone.0094446.

Biographies

Joshua Bergamin is a philosopher at the University of Vienna and co-PI of "(Musical) Improvisation and Ethics."

Christopher A. Williams makes and researches (mostly) experimental music. He is Univ. Prof. of Artistic Research at the Gustav Mahler Private University for Music, and coordinator and co-PI of the "(Musical) Improvisation and Ethics" project at the University of Music and Performing Arts Graz. As a composer and contrabassist, Williams' work runs the gamut from chamber music, improvisation, and radio art to collaborations with dancers, sound artists, and visual artists.