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Bjerstedt, Sven

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Do improvisers intend?

A small survey

Sven Bjerstedt[1]
Malmö Academy of Music
Lund University
Sweden
sven.bjerstedt@thm.lu.se

Abstract

Questions about the existence and temporality of intention in jazz improvisation are investigated based on phenomenological interviews with 48 expert jazz improvisers: Do improvisers intend that which they will play, and, if so, are their conception and execution of a musical idea coincident, or are they separated in time? The findings on improvisatory cognition are summarized and discussed by means of perspectives of phenomenology and 4E cognition. The collected first-hand perspectives indicate that in so far as the improviser is mentally aware of musical ideas, the conception and execution of these ideas are separated in time. Further, while several statements point out that a multi-directional awareness (e.g., internal and external hearing) is required by the improviser, this is perceived to be connected to, or even dependent on, a form of mindlessness. This seemingly paradoxical requirement warrants a distinction between 'mindful' and 'mindless' (embodied) awareness. Based on the phenomenological interviews, it is suggested that improvisational activity is characterized by a continuous oscillation of agency between 'mindful' intentions and 'mindless' impulses. While the expert jazz improvisers in this study do not seem to consider 'mindless coping' to be a completely true description of mastery in their craft, 'mindless coping' still emerges as an important ideal to several of them.

Keywords: jazz improvisation; intention; improvisatory cognition; phenomenology; 4E cognition

Introduction

> The hardest thing to tell is what comes first. Is the hand doing something that it's used to doing, or is the mind leading the hands? … I can't tell if the fingers are leading me or I'm leading the fingers. It's some hard shit to tell. (Harris n.d.)

1. Sven Bjerstedt is a jazz pianist and Professor in Music Education at Malmö Theatre Academy, Lund University, Sweden.

The jazz pianist and educator Barry Harris points out how difficult it is to ascertain the role and function of *intention* in jazz improvisation. This article deals with related questions. What, with regard to cognition, is at work when human beings improvise? Do improvisers intend? Do they think about what they will do before they do it? Judging from Philip Alperson's choice of exemplification, thinking seems to be an essential feature of improvisation: 'In a very general sense, we can think of improvisation as a kind of goal-directed activity ("I need to find something to get this boulder out of the way"), but what makes the activity improvisatory is the sense that what is being done is being done on the fly ("Maybe I can use this branch as a lever to move the rock")' (Alperson 2010: 273).

Alperson points out that improvised actions can be viewed as ways of *solving problems*. In addition, his example points to the relevance of both 'mind', 'body', and 'world' to improvisation. The truly improvisational part of the sequence Alperson describes could perhaps be interpreted as the *realization of the potential* of using the branch. If so, the improvisational act is not so much about performing an action, but about realizing the potential of performing it.

Indeed, many thinkers have argued that it takes knowledge and preparation to improvise. Even though improvised music may be defined as music that is to a certain extent not foreseeable (Gagel 2010), the musical *context* often emerges as an important factor. Alperson (1984: 22) points out that '[e]ven the freest improviser, far from creating *ex nihilo*, improvises against some sort of musical context'. Again, the act of improvising may be seen as a combination of (i) *preparing* materials and strategies, and (ii) *implementing* them; in music like in many other contexts, this is often done in accordance with a certain system of conventions. According to Paul F. Berliner (1994: 241), 'improvisation involves reworking precomposed material and designs in relation to unanticipated ideas conceived, shaped, and transformed under the special conditions of performance, thereby adding unique features to every creation'; furthermore, Berliner contends (1994: 492), improvisational ability depends on 'thinkers [!] having absorbed a broad base of musical knowledge, including myriad conventions that contribute to formulating ideas logically, cogently, and expressively'. Aaron L. Berkowitz (2010: xv), considering such kinds of idiomatic musical improvisation that are learned through 'immersion' in a certain musical system, holds that the ability to improvise in a certain style 'relies on an intimate knowledge of the musical elements, processes, and forms of that style'; on the same note, Carol S. Gould and Kenneth Keaton (2000: 146) argue that

'all musical improvisation relies on the foundations of the particular musical style in which the work exists'. In the words of Frank J. Barrett (1998: 620), 'musicians prepare themselves to be spontaneous'.

Even if there seems to be widespread agreement among these theorists that knowledge of musical systems of convention is crucial for an improviser, it appears to be much less clear how such systems in themselves affect the improviser's task. Style-related systems of conventions, e.g. a jazz 'tune in time' (Bailey 1993: 48) including harmonic and rhythmic frameworks, could be seen as making improvisation *easier* (Pressing 1988)—or, indeed, on the contrary, as pointed out by Stefan Caris Love (2017: 34), as making it *more difficult* 'by introducing the possibility of failure, or, if we prefer, shrinking the set of actions that count as "success"', by making jazz improvisation 'analogous to dancing through an obstacle course'.

In addition to the harmonic, rhythmic and other conventions guiding an improviser's work, there is the crucial aspect of temporality. In improvisation, the transition from preparation to implementation may take place at lightning speed. The time constraints involved in improvisatory action may warrant an outlook different from how we evaluate meticulously prepared actions. Saxophonist Steve Lacy once was asked, 'Steve, in 15 seconds, what is the difference between composition and improvisation?' His reply was: 'In 15 seconds, the difference between composition and improvisation is that in composition you have all the time you want to think about what to say in 15 seconds, while in improvisation you have only 15 seconds' (MacDonald 2022: 217–18). Such speedy transitions from thought to action are, of course, not always easy or even successful. This may warrant a particular outlook also on how to make sense of improvisation. Frank J. Barrett (1998: 610) points out that errors, i.e., discrepancies between intention and action, are used as creative departures and sources of discovery, so that 'looking backward, the "wrong" notes appear intentional'. Barrett interprets this phenomenon as 'an aesthetic of imperfection and an aesthetic of forgiveness that construes errors as a source of learning that might open new lines of inquiry' (ibid.).

In a previous investigation I assumed this working definition of musical improvisation: *an individual and/or collective musical activity which, though it is always situated in a socio-musical context (including input of momentaneous as well as traditional character) is to a certain extent characterized by real-time decision making by the performers of that musical activity* (Bjerstedt 2014: 36). But how does 'real-time decision making' work? Even at lightning speed, decisions take *some* time, do they not?

The notion of 'thinking', 'knowing', or 'intending' jazz improvisers is as old as the art form itself. Already the first great jazz musician, the legendary New Orleans cornetist Buddy Bolden, was said to have 'studied too hard, always trying to think up something to bring out' (contemporary fellow New Orleans musician, quoted by Gioia 1988: 59). In Duke Ellington's view, musical improvisation must rely in some sense on preceding thought and preparation: 'there has to be some thought preceding each phrase, otherwise it is meaningless'; 'Anyone who plays anything worth hearing knows what he's going to play, no matter whether he prepares a day ahead or a beat ahead. It has to be with intent' (Cooke 2002: 155).

In contrast, however, Derek Bailey (1993: 66) characterizes musical improvisation as a process in which musical thinking and performing occur *simultaneously*; Philip Alperson (1984: 26) describes it as creating a work 'as it is being performed', and Paul Rinzler (2008: 161, 165) suggests that '[i]mprovised music at its purest is not music that is mentally conceived and then executed very quickly after its conception, but is music that is mentally/bodily conceived and *thus* executed'; 'the creative process is *coincident* with the creative product' (emphases added). On the other hand, Andrew Kania (2011: 395) proposes the following definition of improvisation: 'a performance event guided by decisions of that event made by the performer *shortly before* the event takes place' (emphasis added). Similarly, in a discussion of the view that to improvise music is 'to make decisions about the music one is playing as one plays', Lee B. Brown (2011: 66) problematizes the implicit temporal marker in the phrase 'as one plays': 'Surely an improviser's decision to go one way rather than another must have been made at least a nanosecond before following through'. There are indeed conflicting views regarding this issue.

To ask about improvisers' intentions may seem odd as long as you view 'improvisation' as a term for that which has not been planned (which is, of course, the word's literal meaning: *improvisus* = unforeseen). An *ex nihilo* view of jazz improvisation is certainly not uncommon, equating the improvised and the primitive. But not only do jazz musicians typically internalize a cache of musical forms (e.g., meters, chord progressions, phrase patterns) as frameworks and as materials for their improvisations, they arguably also have an active cognitive relation to these frameworks and materials *in* the very act of improvising; notably, Berliner's (1994) extensive ethnographic study in this field is entitled *Thinking in Jazz*.

Berliner's general perspective on the development of a jazz improvisation could perhaps be summarized by drummer Max Roach's statement:

'After you initiate the solo, one phrase determines what the next is going to be. From the first note that you hear, you are responding to what you've just played: … you're responding to yourself. When I play, it's like having a conversation with myself' (Berliner 1994: 192). Such an approach focuses on motivic or thematic development. It is an approach which may be achieved through an appropriate balance between repetition and variation and which will depend on multiple activities: 'conceiving, articulating and remembering ideas' (Berliner 1994: 199); if you are to have a conversation with yourself, you need to know exactly what you have just said (as well as what others have said, if you are to converse with them, too).

In concordance with this perspective, Alfred Pike (1974: 91) in his brief but ground-breaking article on the phenomenology of jazz points to the importance of *memory* in jazz improvisation and, accordingly, emphasizes the importance of prior knowledge to the work of the jazz improviser: inventions 'emerge from', are 'determined by', and are 'logically related to' what was already known; 'The new is rooted in the old'.

According to Pike (1974: 89), when bringing an image or idea into being, a jazz soloist is 'instantaneously grasping … its developmental possibilities by *prevision*' (emphasis added). Pike clearly considers a kind of systematic trial and error process to be of importance in the jazz improviser's elaboration of musical ideas: 'This trial and error is not blind. It is guided by goals and is methodical rather than erratic' (1974: 91).

There is an obvious link between musical phraseology and purely *physical* aspects of improvisation, such as habitualized fingering sequences. Several theorists point to the importance of *not* thinking when you improvise jazz. Keith Sawyer (1992: 257), summing up results of his interviews with jazz musicians, finds that they 'believe that their solos are better when they are minimally conscious'. David Borgo (2002: 175) points to experiences of spiritual, ecstatic, or trance-like performance states described by several free improvisers, ranging from 'total mental involvement' to 'complete annihilation of all critical and rational faculties' as well as 'spirit possession' and 'a voluntary, self-induced form of trance—more akin to shamanic practices'.

The view that the mind is minimally involved in improvising has been advocated vigorously also with regard to standard jazz. The social anthropologist David Sudnow learned to improvise jazz on the piano when he was in his thirties. His book *Ways of the Hand* (Sudnow 1978; 2001) provides a very detailed account of his process of acquiring the skilled hands of a jazz pianist. In Sudnow's description of the final stage of his development as a jazz piano improviser, there is no longer an I that plans, no mind that aims

ahead: 'I don't think at all about where I'm going. My hands make it up as they go along' (Sudnow 2001: 125). What Sudnow describes appears to be a non-theoretical, non-cognitive, sensuous and embodied kind of consciousness or knowing. Marcel Cobussen (2022: 4) has suggested that the term knowledge may be used in a broad sense in artistic research, 'not only as cognition, but also as affect, experience and awareness', and he interprets Sudnow's description as disclosing a space 'where doing and thinking meet: better yet, where doing becomes thinking and thinking becomes doing, where doing = thinking'.

The statement 'Don't play what you know. Play what you hear' has been attributed to the trumpeter Miles Davis (cf. Meelberg 2016). This exhortation would seem to imply the view that you as a jazz improviser are actually able (and required!) to 'hear' in your mind beforehand that which you are about to play. As we have seen, however, there is hardly an absolute consensus on this issue. In a YouTube video (Harris n.d.) recorded in the 1990s, jazz pianist and educator Barry Harris speaks about what comes first when a musician improvises. The video is part of a collection of videos which his Dutch colleague Frans Elsen recorded during workshops that Barry Harris gave at the Royal Conservatory in The Hague between 1989 and 1998. Here is a transcript of what Harris says from 2:20 to 4:55 in the video.

> The hardest thing to tell is what comes first. Is the hand doing something that it's used to doing, or is the mind leading the hands? And that is the hardest thing to tell out of this whole thing, 'cause the hands are like masters, and they have a separate entity, like certain grooves, and if you aren't careful with the hands they'll just play those grooves that they like. … Sometime I think the closest I can come to it is if I think of rhythmic things—and just think of the rhythm, don't think of notes to go with the rhythm. Just think of the rhythm. Then I think I come closest to being original, if I think of the rhythm first. Without humming a note, it is hard to do too. Just think of rhythm without humming a note. And then you've got to make the notes fit the rhythm. … And then I see where the mind can think a little bit ahead of what you're doing. Let me give you an idea about rhythm. [Sits down at the piano, plays a quite complex rhythmic solo in bebop style and hums along.] And still I can't tell who's doing what. I can't tell if the fingers are leading me or I'm leading the fingers. It's some hard shit to tell. (Harris n.d.)

Raymond MacDonald (2022: 222) has remarked that musicians who describe improvisational activities tend to use different 'repertoires of talk'; there is 'a repertoire of *mastery*' as well as one 'of *mystery*' (original emphasis). Incidentally, *The Washington Post* included in Barry Harris's 2021 obituary a citation from jazz scholar Dan Morgenstern's 1970 review of a Harris

recording, clearly adhering to the first of these 'repertoires': 'Harris is one of the very few pianists who never allow the fingers to fill in when the mind falters' (Schudel 2021).

Many instrumentalists, including myself, attest to their ability to sing along with their instrumental improvisations. How could that at all be possible, if we did not intend (just) beforehand that which we are going to play? Could our singing be mimicking our playing, hence be a slightly later copy of something we did not at all intend beforehand? Or is there some sort of direct bodily connection between our hand and voice that does not include thinking with our brains—possibly because there is no need for an 'intellectual' detour?

The questions that sparked this study are closely related to Barry Harris's statement. They could be expressed in this way: *When artists improvise, do they consciously 'intend' ('think', or 'know') that which they will do? If so, does this mental awareness occur beforehand, that is, are the improviser's conception and execution of a musical idea separated in time—or are they coincident?*

Theoretical perspectives

Philosophers of mind have problematized the relations between acting and thinking. Ludwig Wittgenstein (1953: 318) questions the idea that thinking is a specific activity or process; rather, he holds, thinking is a process *accompanying* our actions or words: 'the thought seems *not to be separate* from the expression' (original emphasis). Gilbert Ryle (1979: 24) suggests that the verb 'to think' in many cases has an adverbial use, referring to the manner in which someone goes about things, rather than to a separate process. For someone to do something while thinking of what he is doing, according to Ryle, is to do what he is doing 'with his wits about him'; to think what one is doing 'is not to be doing both some X-ing and some separately doable Y-ing'.

Phenomenology

Phenomenological perspectives focus on the role that the body and its relations to the environment play in cognition. Hubert L. Dreyfus (2007: 352) holds that embodied skills have 'a kind of non-mental content that is non-conceptual, non-propositional, non-rational and non-linguistic'. However, several researchers insist that even though the situated body is central to skilled coping, this doesn't mean that no thinking or reflecting is involved (cf., for instance, Høffding 2018; Montero 2019; Schyff and

Schiavio 2022: 499). In a critical discussion of this view, Steve Torrance and Frank Schumann (2019: 252) argue that in jazz improvisation, 'an entanglement between mindful and mindless processes is particularly clear' and, further, that the cognitive processing in improvisation includes *both* fast/mindless *and* slow/mindful aspects. They hence consider Dreyfus's view of expertise as 'mindless, absorbed coping' to be insufficient. In addition to, entangled with and as an extension of that view of expertise, they point to the importance of a *directive mental presence in the moment*.

Neuroscience

Neuroscientists have studied what goes on in the brain during musical improvisation. In 2008, Charles J. Limb and Allen R. Braun, based on reports regarding jazz pianists' increased *brain activity* in several regions during improvisation, hypothesized that creativity entails an upregulation of certain prefontal regions and the downregulation of others (Limb and Braun 2008); this has been corroborated and further illustrated by several studies (e.g., Donnay et al. 2014; Liu et al. 2012; Manzano and Ullén 2012).

If we would like to know more about *the specific reasons for a specific improvisatory activity*, then brain research will arguably not be able to contribute much of an answer. Within neuroscientific discourse, there is an awareness that factors influencing musical improvisation are not confined to the improviser herself; importantly, non-cognitive, social factors such as group interaction and audience feedback may influence musical improvisation, not to mention, e.g., the emotional and political issues involved. Malinda McPherson and Charles J. Limb (2013: 83) question whether creative performance can be studied empirically without changing the essence of the art; they argue that if creativity studies are to be both scientifically and ecologically valid, they require collaboration between neuroscientists and artists; scientists 'cannot effectively study creativity without the intuitions and discoveries of the creative agents themselves'.

Embodiment

In theories of *embodiment*, cognition is viewed as based on a 'sensory-motor loop' where the body, the brain and the mind are understood as one system, and where the brain is an organ that produces bodily (motor) response to sensory stimuli (Iyer 2014: 76). Ecological psychology's concept of *affordances* for an organism's interaction with the environment (Gibson 1966; 1979) may offer fruitful perspectives. For instance, the musical instrument, the hands and the improvisational context (e.g., stylistic

norms and previous actions) provide a wide and refined set of possibilities for the expert instrumentalist.

In musical improvisatory interactions, as indeed all forms of musical participation, bodily skills are at play in real-time interactive contexts which involve adaptivity and negotiation between fellow musicians and audiences, instruments, acoustics as well as social, cultural and historical factors. David Borgo (2013: 105) has pointed out how musical improvisation offers a situated practice for exploring *interagency*: we should explore agency 'in the nexus of personal, interpersonal, and material factors'.

Susanne Ravn and Simon Høffding (2021: 2) argue that 'the idea that improvisation is based on spontaneous and more or less autonomous acts does not do justice to the actual practices and expertise of professional improvisers'. Based on interviews with two expert improvisers, Ravn and Høffding hold that these artists' improvisations display an *oscillation of agency*, an active investigation of the suspension of agency and control through an oscillatory process of assuming and relinquishing agency, and that 'negotiating agency is an essential improvisatory skill' (2021: 20).

The *4E model of cognition* insists that cognition is shaped and structured by dynamic interactions between brain, body and physical and social environments. Improvisatory cognition could be seen as at the same time (1) *embodied*, (2) *embedded*, (3) *extended*, and (4) *enactive*. *Embodied* could perhaps be understood as involving the entire living system of brain and body; *embedded* as displaying layers of co-determination with physical, social, and cultural aspects of the world; *extended* as including environmental and social resources beyond the individual agent's brain and body; and *enactive* as involving the active bringing-forth of meaningful relationships between agent and environment (cf. Newen et al. 2018; Schiavio and Schyff 2018; Schyff and Schiavio 2022; notably, the subject index of the first publication, a near-1000-page tome, does *not* include an entry for 'improvisation').

Method

Do improvisers actually know and understand—do they need to know?—what it is they are doing, and, if so, can they be expected to formulate such knowledge and understanding in a true and comprehensive way? The speed of chains of events in musical improvisation is much higher than any discursive account imaginable. If it therefore is impossible in principle to account for what goes on in improvisation *as* it goes on, any remaining

methods to investigate what goes on would have to be carried out to an important extent in retrospect, e.g. through recordings and stimulated recall, or through more general statements about more general experiences—which is the alternative that this study opts for.

Needless to say, the preliminary character of this investigation will not permit any definitive conclusions. Also, importantly, from a methodological point of view a monolithic image of improvisational processes is hardly helpful. I believe we must consider both the possibility that different improvisers may have qualitatively quite different experiences *and* the possibility that one and the same improviser may experience improvising quite differently on different occasions. Rather than one common process, we are probably dealing with a diverse landscape of practices. In addition, it is worth considering that the language individuals employ to describe creative practices is often fragmentary and potentially confusing. I suggest, however, that more or less extensive accounts by experienced improvisers may still provide a valuable source of information.

Simon Høffding (2018: 13–43) has argued extensively and, to my mind, quite convincingly that *phenomenological interviews* may provide a fruitful method to attain a richer picture of what goes on 'in' musicians, exemplified by his own interviews with the members of the Danish String Quartet. Qualitative interviews, in Høffding's opinion, provide a way to expand the methods available to phenomenology. To a phenomenologist, all knowledge is grounded in a first-person perspective, and interviews may be a way to gather knowledge of such perspectives. Importantly, a 'phenomenological interview' in Høffding's sense is not phenomenological *in itself*; rather, it may inform a phenomenological investigation (2018: 15). Furthermore, even though a first-person perspective is in focus, the interview is accomplished in a second-person perspective that is mutual or reciprocal, i.e., a subject–subject relation (2018: 17). Høffding argues that from a methodological point of view, the phenomenological interview through its contextualized nature may integrate *enaction*, *embodiment*, and *embeddedness*, making it an appropriate research method that is consistent with, for instance, requirements that may be raised from a 4E cognition perspective (2018: 31).

The statements of jazz performers presented in the following sections come from three sources:

(i) In 2010 I carried out qualitative interviews with 15 Swedish jazz musicians (average time duration c. 90 minutes). The interviews provide a rich source regarding several aspects of jazz improvisation, and

some statements emerge as highly relevant to the issue of improvisatory cognition.

(ii) In April 2021, via email, I posted a qualitative query regarding improvisation and intention to an international network of jazz musicians, educators, and researchers. With reference to the Barry Harris video mentioned above and to Sudnow's (2001) book, I invited the network's perspectives on whether the improviser 'hears' (or 'knows') in advance that which he plays. My question was without reference to any specific theories of cognition (it is cited in the footnote).[2] In response to my query I received 43 email messages from 23 separate individuals, several of them including quite extensive discussions of the issue. Due to the discussion thread format, participants were able not only to respond to my initial query but also to comment on replies by other participants.

(iii) In January 2021, via email messages, I posted a similar qualitative question[3] regarding improvisation and intention to 40 Swedish professional jazz musicians. I received ten responses to this query, several of them very extensive.

2. In one of his workshops, Barry Harris speaks about what comes first when a musician improvises (https://www.youtube.com/watch?v=N5VDXcmRiaU, 2:20 to 4:55): 'The hardest thing to tell is what comes first. Is the hand doing something that it's used to doing, or is the mind leading the hands? … I can't tell if the fingers are leading me or I'm leading the fingers. It's some hard shit to tell.'

To me this would seem a crucial question about jazz improvisation. I do know that the social anthropologist David Sudnow in his book *Ways of the Hand* provides a very detailed account of his process of acquiring the skilled hands of a jazz pianist, and that in his description of the final stage of his development as a jazz piano improviser, there is no longer an I that plans, no mind that aims ahead: 'I don't think at all about where I'm going. My hands make it up as they go along' (2001: 125).

But how, then, if the hands make it up one their own, how are we to explain the fact that so many musicians are able to sing along with the improvised lines that they play on their instrument? Is this singing-along with one's instrumental improvisation an indication that—contrary to Sudnow's view—the improviser does in fact 'hear' (i.e., know?) in advance what he's playing—or is his voice 'just' imitating what he plays?

3. Would you say that you usually know what you are going to play, the moment before you play it—or not? As a pianist, I know that I can sing along with my improvisations, and that may suggest some kind of mental foresight. But how do our brains really work in this regard? Do the familiar patterns of the fingers take over sometimes? Or is it the other way around, that it is usually they who control, and that the thought mostly follows after? This is something I would like to try to understand better, and I know no better way to find out than to ask your and other improvising musicians' opinions. (NB. This is my English translation of the query, which was sent out in Swedish.)

The musicians have been anonymized and are presented here with reference only to their main musical instrument, year of birth, and to which interview category they belong.

Findings

The totality of collected data included a variety of perspectives. The extensive qualitative interviews (i) were part of an investigation focusing on improvisers' outlook on jazz improvisation as 'storytelling'; the citations presented here were extracted from statements made in that context. The email thread responses from the international network of musicians, educators and researchers (ii) ranged in length from extensive essays (up to 1704 words) to brief comments to previous contributions. Several responses included more general perspectives that were only indirectly relevant to this study's research question.[4] Similarly, the email responses from Swedish musicians (iii) varied in length (from 39 to 852 words) and also—but to a lesser degree—included some more general and only indirectly relevant perspectives.[5]

Several of the participants emphasized the difficulties in answering the question whether an improviser 'hears' in advance what he plays. It was also clear that the either/or binary implied in my formulations of the questions (cf. notes 2–3) did not appeal to a number of participants who provided more nuanced perspectives in their replies. At the same time the many extensive replies I received testify to the participants' willingness to overcome such difficulties and to provide thorough and extensive answers as best they could. I will present their responses under three thematic headlines: (i) Intentions and mental images *versus* 'The ears lead you'; (ii) Preparation and planning *versus* the needs of the performing moment; (iii) Is the mind leading the hands? It should be noted that these formulations were not included in my questions but are a way of thematization.

4. E.g., references to and opinions on literature and historical/anecdotal examples of statements by famous musicians and of solos that were worked out in advance; general analogies to other human activities such as conversation, games, and car driving; arguments that responses must differ due to jazz improvisers' tendency towards individual vocabularies; general discussions of 'muscle memory' and of what may be known through neuroscience; and arguments that human creativity must in part remain a mystery since 'talent' cannot be explained (or taught).

5. E.g., experiences from and opinions on teaching improvisation; references to famous improvisers' use of a cache of phrase patterns; and comparison with liturgical organ improvisation.

Also, importantly, while two of the headlines may be said to continue the either/or binary implied in my email questions, several responses openly or implicitly reject such a binary. Since this study's focus is on exactly the issue of conscious intention versus 'mindless coping' in musical improvisation, I find this way of thematizing the responses relevant even though they include perspectives that are more nuanced and non-binary.

Intentions and mental images versus 'The ears lead you'

Several responses adhere to the view that playing is preceded by some sort of *brain activity*, expressed, e.g., in terms of 'thought', 'planning', 'impulse', or 'mental image'. Many of these perspectives include suggestions regarding the time span involved, spanning from 'a few seconds' over 'some 10th of a second' to 'millisecond' or 'microsecond'.

> For me, it always starts with a mental image of the sound, not my 'hands' acting on their own. (US saxophonist, b. 1956; ii)

> For me, the brain guides the playing, not the fingers. The brain in its turn is guided by impulses down to the last millisecond. (Swedish pianist, b. 1966; iii)

> I always know what I'm going to play before I play it … I believe the thought comes some 10th of a second before. (Swedish trumpeter, b. 1969; iii)

> I've never planned the opening of a solo more than a few seconds in advance, and even those short-term 'plans' are often abandoned in a microsecond as they don't feel right when the actual break or top or entrance comes, because you're interacting in real time with other people who are not predictable, not painting on a blank canvas. (US saxophonist, b. 1956; ii)

One participant offered a quite rich description of the content of the *mental image* that precedes playing, as well as some reasons why new ideas may appear.

> The opening gesture can be a little more conceived (audiated, 'heard' in inner hearing or aural imagination) as a rhythm first, perhaps with a pitch contour; or it can be conceived more in terms of pitch. Sometimes it just feels like a 'move' or a sound in action, and all those things come together in one unified package of thought—a particular timbre, dynamic, envelope, pitch(es), rhythmic placement, etc. (US saxophonist, b. 1956; ii)

The centrality of *internal hearing in advance* is emphasized in several statements. Interestingly, one participant expressed his opinion that when 'the ears lead you', the mind should 'let go'.

> You have to be able to hear what you're doing before you do it. Otherwise, you're just guessing, and all of the greats knew exactly what they were doing. (US trumpeter, b. 1949; ii)

> I hear what I play. Well, sometimes I play it wrong, then what I hear doesn't come out, but still… (Swedish saxophonist, b. 1978; iii)

> When improvising, the mind 'should', or ought to, let go, ideally. It's left to hearing. The ears lead you. This isn't always true, but it's a good goal. (US pianist, b. 1952; ii)

One way of interpreting the view that the improviser's mind should let go when his ears lead him may be that some sort of *direct connection between (internal) hearing and playing* is posited, making 'the mind' superfluous in the process.

Obviously, while several of the preceding statements refer to some sort of 'internal' listening 'in advance', the improviser also needs to *listen externally* to the actual sounds of the ongoing music. In a rich and detailed description, one participant emphasizes the *intense mental activity* going on in the performing improviser, at the same time pointing out that this mental activity is 'more like little physical feelings'.

> I would say that hundreds of adjustments are going on within a chorus of 12-bar blues or 30 seconds of free improvisation, with varying degrees of consciousness or verbalization: tuning a note, adjusting to the slightly varying tempo and feel of the other players, moments of slipping and catching up, satisfaction vs. regret (which you learn to put aside or you can't play, but the thoughts still arise), little categorical directive thoughts like 'develop this motive', 'down instead of up', 'leave space', 'they're getting ahead of me in building to a climax' (or 'calm down, I'm getting ahead of them, they're not responding'), 'the drummer answered me, nice', too inside or outside, repetitive or busy, etc. … Multiply that by the number of players in all directions and a lot of mental activity is going on. … I'm deliberately articulating things that are more like little physical feelings. (US saxophonist, b. 1956; ii)

I consider this somewhat paradoxical description of *mental activity* as being more *like physical feelings* a highly interesting contribution and will return to this perspective in the concluding discussion.

Preparation and planning *versus* the needs of the performing moment

While thinking and planning must be part of the musician's preparations, they may become cumbersome in the performance situation.

> As soon as I start to think about it, I can't play anymore. If I think: now I'm going to play creatively, that will lead to nothing. I have lots of knowledge to profit from, and I have thought and practised at home—but I can't think like that when I'm playing. *It's improvised music, so we have to be there all the time.* (Swedish saxophonist, b. 1970; i)

This suggested dichotomy between 'thinking' and 'being there' in the improvisational situation emerges as an interesting perspective to follow up on.

A number of participants point out that the question of a *mindful* versus a *mindless* stance in jazz improvisation may in part depend on the material.

> When I play a standard tune … some sort of decision of what comes out of the instrument is probably made some microsecond before it actually comes out. Everybody has more or less a cache of phrases, sequences that unconsciously emerge in solo playing. But I want to emphasize the importance of trying to minimize this so that it doesn't get the better of you. When I play in a more free context with more free harmony and rhythm I feel a large, meditative feeling, and I improvise all my notes one hundred per cent with no conscious plan or idea whatsoever about what the result will be. (Swedish trumpeter, b. 1961; iii)

Several participants point to the importance of *flow* in the present moment, and what it takes to achieve it.

> When I perform it's about letting go, listening inwards and letting the music flow freely. It's a sort of process of mindfulness, of flow. To listen, to follow the music without governing or assessing it. Anattā, a state of no self. When that process works you don't think, the improvisation is born just as naturally as the heart beats or as we breathe. A state of happiness and gratefulness. (Swedish pianist, b. 1951; i)

Certain qualities in the improviser are often seen as necessary, among them *openness*, *presence*, and *mental preparedness*.

> What we must have is the ability to listen to the now and adjust our playing to the demands that are called for right now and to be able to have that flexibility which is, to some extent, motorically and physically conditioned. But if we prepare, should we say, segments with the aim of being prepared when it happens, then I think that we, in a way, make the same mistake as when we talk. Preparations, practice, must include something other than preparing oneself for

> imagined scenarios. To me it's really completely a mental preparedness. (Swedish saxophonist, b. 1965; i)

A number of participants emphasize that in their view the conscious intellect is not really at work during improvisation; rather, they point to the *dynamics between the conscious and the subconscious*.

> I often experience that the music that is guided intuitively and subconsciously is more refined—that we on that level are more brilliant, free and playful. (Swedish saxophonist, b. 1965; i)

> Much of what's coming out seems to go directly from the subconscious, without the conscious intellect really having the time to observe its origin. Much of our mental capacity is busy dealing with the bodily movements that it takes to play your instrument. (Swedish saxophonist, b. 1969; iii)

To some musicians, the notion of *a higher power* involved in improvisation emerges as an important one.

> Some other higher (?) power comes and 'uses me' as an instrument … I know what I'm going to play, and suddenly and without control I turn into something that a higher power is 'playing through', and then I'm just as unknowing of the process as everybody else in the room. (Swedish trumpeter, b. 1969; iii)

Is the mind leading the hands?

Several participants offered their views on the notion (exemplified by David Sudnow's book; Sudnow, 2001) of 'the hands playing', commenting on, for instance, muscle memory, finger patterns, and internalized skills:

> I'm sometimes prevented by my fingers that have certain habitual patterns. … But it might be precisely that which is your 'own sound'. (Swedish saxophonist, b. 1978; iii)

The notion of 'the hands playing' was challenged by several participants who pointed to, for instance, the constant dynamic relationship between 'hands' and 'brain'.

> I find the idea that 'the hands' are playing patently ridiculous. There's muscle memory for small gestures, but it doesn't guide the sequence of events or even the unfolding of them beyond the level of a few fast notes. For example, 'the hands' (semi-conscious habitual movement) can play an arpeggio or a scale run or a diminished lick, but within microseconds the brain is telling the hands to change—to avoid cliché, to react to what others are doing, etc. … I think literally everyone knows what this is like cognitively all the time: talking,

> walking, cooking, driving, sports of any kind, etc. There is a constant stream of feedback and small decision making at every second. (US saxophonist, b. 1956; ii)

One participant problematized the way the email query had been formulated, offering several important perspectives (largely consistent with theories of 4E cognition) on the *interface of brain, body, and world*.

> Mind is not the same as brain. … The cognitive activity is happening at the interface of brain, body, and world, so the brain is not computing every motion of the hand. It is just paying attention to error messages that arrive from our embodied and enactive mind. We need to switch the discussion away from the idea that as we listen we are perceiving and computing everything that goes on and then deciding what to do based on that. That would actually put us in a responsive mode that would be too slow and too resource intensive. If instead we are improvising in a predictive mode, our brain then need only kick in when something unexpected happens. The brain is picking up on unexpected events, but doesn't actually process all of the expected ones, since our embodied predictions will often suffice. This view does, however, help to explain the phenomenological feeling of shutting off our thoughts in order to play well. (US saxophonist, b. 1970; ii)

In my view, these perspectives link together quite convincingly the embodied view of cognitive activity as including much more than brain activity with the phenomenological interviews' many testimonies to the importance of an approach to jazz improvisation that is free from 'controlling thoughts'. In the concluding section of this article, I will return to this outlook on my initial questions.

Discussion

Do improvisers intend that which they will play, and, if so, are their conception and execution of a musical idea coincident, or are they separated in time? The findings of this small survey, however preliminary, are based on a collection of first-hand perspectives that provide a variety of interesting perspectives on these issues.

The focus of this study has been on how improvisers describe their experiences of improvisatory cognition, e.g. in terms of having and/or not having conscious intentions when they improvise, or in terms of experiencing multi-directional awareness and/or mindlessness. *Embodied* awareness emerges as an important phenomenon in these descriptions. Embodied cognition (the 'first E' of the 4E model of cognition) is arguably highly relevant to the present study, while it is in general less clear how its results

pertain to perspectives of embedded, extended and enactive cognition. While the findings of this preliminary study do include occasional statements of relevance for these perspectives, it remains to be determined by way of a broader scope of empirical results how improvisers' descriptions of their experiences relate to dynamic interactions with the physical and social environment.

The totality of perspectives presented here includes a diverse set of modalities of the experience of improvising, e.g. *hands playing me* (Sudnow 1978; 2001); *higher power playing me* (trumpeter, b. 1969); *simultaneous playing and creating* (Alperson 1984; Bailey 1993; Rinzler 2008); *hearing idea just before playing* (Miles Davis, in Meelberg 2016; Kania 2011; trumpeter, b. 1949); *playing something based on preparation* (Ellington, in Cooke 2002); *sometimes playing with and sometimes without conscious planning* (trumpeter, b. 1961); *playing something entirely new*, etc. Such a collection of different perspectives emerges as an interesting result of the present study and a useful point of departure for further investigations. A tempting task for more extensive future studies in the field of improvisatory cognition may be to investigate if and how each of these—and additional—modalities resonates with experienced improvisers.

Several participants seem to agree that intentions may have (or, in the experience of some, always have) a role and function in improvisation. The terms they use differ, though: 'brain', 'thought', 'plan', 'mental image', 'impulses' etc. Some terms include qualifications ('*short-term* "plans"'; '*unified* package of thought'; 'an *embryo* of a musical idea'). These various terms probably do not denote one unified image of an underlying reality.

The participants' indicated *time span* between intention and improvisatory action ranges from 'a few seconds' to 'a microsecond'; the opinion that conception is prior to execution appears to be unanimous, and there is no mention of temporal coincidence. The view in previous studies of simultaneous conception and execution of a musical idea (Alperson 1984: 26; Bailey 1993: 66; Rinzler 2008: 161, 165) is not corroborated by the present findings; rather, they indicate that in so far as the improviser is mentally aware of musical ideas, the conception and execution of these ideas are *separated in time*.

A notion of *internal hearing in advance* appears to be important to many improvisers—but not necessarily closely connected to thinking, however: 'The ears lead you', and the mind should 'let go'. Simultaneously with this internal hearing, the improviser will also need to *listen externally* to what is going on around her. Some participants indicate that this kind of listening

works at its best when the 'mind is clear'. This would indicate some sort of *direct connection* between internal hearing and external listening on the one hand and playing on the other; a connection that will benefit from some sort of *mindless stance*.

One participant holds that improvisatory creation includes 'playing things that you don't really know beforehand'. Another musician emphasizes the fertility of improvisatory intention: one idea 'generates continuing musical ideas', and the improviser learns to 'surf the wave of those ideas', to 'go with them'. Furthermore, positive evaluations of improvisers' playing include descriptions such as 'is playing from the inside out', 'has contact with her inner flow'. These different kinds of statements seem to imply some sort of direct connection between hearing and playing, without any 'mindful' detour. Several participants point out the importance of *flow*, of 'letting go', of being free from 'controlling thoughts'. To some improvisers a mindless stance seems to be connected with and stimulated by musical *contexts* that are considered 'more free' (as opposed to standard tunes with fixed chord sequences). I interpret the apparently prevalent agreement regarding a direct connection between hearing and playing as being in accordance with Torrance and Schumann's (2019: 261) distinction between fast/mindless versus slow/mindful aspects of cognitive processing in musical improvisation.

While preparation is described in words such as 'thinking', 'planning', 'investigating', performance on the other hand seems to connote phenomena that are much less connected with or dependent on thinking: e.g., 'communication', 'flow', and 'being there'. One participant states that 'when I perform it's about letting go'; 'when that process works you don't think'. Another one emphasizes that preparation in the context of jazz improvisation ought to be exclusively about 'mental preparedness' in a more general sense—not about preparations for specific imagined scenarios.

The role and function of the *subconscious* in musical improvisation is mentioned by several participants; one of them states that 'it's impossible to be fully conscious regarding all parts of the process', and another one mentions that to him, improvisatory decisions that seem to be guided intuitively or to be 'controlled from a subconscious centre of creativity' may result in more refined, brilliant and playful music. The expression *a higher power* might perhaps be interpreted as equivalent in some sense to the subconscious.

One participant points to and exemplifies the intense, detailed and non-articulated mental activity that goes on in improvisation, stating that 'I'm

articulating things that are more like little physical feelings'. According to this view, then, such mental activity is not 'articulated' when it happens—but, in principle and to a certain extent, it could be articulated in hindsight.

The result is perhaps slightly paradoxical: a required multi-directional *awareness* (exemplified by internal and external hearing) is perceived as connected to or even dependent on *mindlessness*. Granted, neither of the terms 'aware' or 'mindless' have been clearly defined in this context. Nevertheless, I propose that this apparent paradox should be taken as the perhaps most important result of this investigation: a result that I find is quite convincing with regard to the *embodied* approach to (improvisatory) cognition that is central to both phenomenology and 4E cognition. The awareness that is at work in, for instance, the kind of internal and external hearing that is presented as a requirement for an improviser, then, is not necessarily what we would call 'mental awareness'; rather, it is a question of an *embodied awareness*. Again, the statement that much of the details in improvisatory activity are 'more like little physical feelings' emerges as relevant. This may prompt us to include an explicit distinction between impulses and intentions in this context. While *impulses* may be seen as immediate and reactive (as in the many testimonies to a direct connection between hearing and playing), *intentions* are arguably calculated and proactive. What some participants have termed 'the subconscious' or even 'a higher power' might perhaps also be interpreted along these lines, as instances of embodied awareness.

The English and Swedish queries I sent out were both formulated in a rather 'naïve' way, as a sort of 'choice' question about whether jazz improvisatory activity is primarily a matter of mind or of hands—brain or fingers—leading the activity. Several responses provide rather more nuanced formulations regarding this issue. One participant holds that 'muscle memory doesn't guide the events or even the unfolding of them', and that in moments where internalized, habitual movements such as finger patterns do actually guide events, 'within microseconds the brain is telling the hands to change'. Just like in many everyday activities, this musician contends, there is 'a constant stream of feedback and small decision making at every second'. According to this view, an improviser can be more or less aware of such feedback and decision making, and the existence of a constant stream of decisions does not exclude 'a sense of flow and effortlessness'. These notions are supplemented by another participant's observation that the brain will only need to pay attention 'when something unexpected happens'. The 'small decision making' referred to above, then, need not

necessarily always be 'mindful'. With the point of departure that an improviser's hands and ears are parts of her cognitive capacity, what goes on in improvisation could to a large extent be seen as *embodied predictions*.

Philip Alperson (2010: 273), when he presented the choice of a branch as an instrument to get a boulder out of the way as an example of an improvisatory act, left us to fantasize about the many ensuing minor improvisatory actions it would take to actually perform that task: a series of near-instantaneous choices regarding position, balance, force and so on. Just like in several other everyday activities, and *just like in jazz improvisation*, there would arguably be (in the words of one participant) 'a constant stream of feedback and small decision making at every second, at a wide range of levels of self-awareness, even if an overall sense of flow and effortlessness feels dominant'. While you are trying to get the boulder out of the way, after having chosen the branch as the means to perform the task, you are arguably improvising in a predictive mode: this will do it. And perhaps it does, without any problems; it might require no further thought. If not, however—if the boulder resists, or if it rolls in an undesired direction, for instance—, the unexpected events will prompt the brain to intervene: 'within microseconds the brain is telling the hands to change'.

What, with regard to cognition, is at work when human beings improvise? Based on this investigation, it could be suggested that improvisational activity is characterized not only by an oscillation of agency (Ravn and Høffding 2021: 20) between internal and external factors, but also, essentially, by a continuous *oscillation of agency between 'mindful' intentions and 'mindless' impulses*.

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