

Descriptions of improvisational thinking by expert musicians trained in different cultural traditions

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May 16, 2022.

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Abstract

Research about improvisation often focuses on one musical tradition. The current study investigated descriptions of thinking behind improvisation in different cultural traditions through interviews with advanced improvisers residing in a metropolitan area in the United States. The participants were rigorously trained in their tradition and have performance experience within it. However, as immigrants they are experienced in communicating with Western audiences and conversant in Western ways of thinking about music. Immediately after completing the improvisation, each participant listened to a recording and looked at its visual representation, while describing the underlying thinking. The visual representation showed pitch contour and note length without reference to any notational system. A thematic analysis by researchers trained in Western classical music and jazz revealed eight main themes: Licks and Conventions describe how prelearned material and convention guided creation; Reaction, Forward Looking, and Repetition & Variety outline various processes that shape creation in the moment; and Aesthetics, Communication, and Emotion provide clues to the improvisers' motivation behind choices. Interestingly, the use of prelearned patterns appears to facilitate improvisations in all the traditions represented. This and other identified strategies appearing cross-culturally may be indicative of possible underlying cognitive constraints. Identification of these shared strategies from a classical/jazz viewpoint may aid educators in broadening their curricula to include other musical traditions of improvisation.

Keywords: improvisation, cross-cultural, interviews, patterns, stylistic convention.

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A major limitation of current practices in music education is the focus on music from western cultural traditions. Western¹ classical music is still represented more than any other style in catalogues of major music publishers and is embedded in many pedagogical materials such as class method books and the Suzuki books designed for private instruction. Even as music teachers expand repertoire selections into popular music genres, much of this music is still based in western classical tonality. A focus on western classical music has been linked to lack of student engagement especially as student populations increasingly come from more diverse cultural backgrounds (Lind & McKoy, 2016). While definitions of culture are a matter of constant and longstanding debate, for our purposes culture can be defined as “the ideations, symbols, behaviors, values, and beliefs that are shared by a human group” (Banks, 2008, p. 133). Therefore, a focus on one cultural tradition may lead students from other cultural backgrounds to feel unwelcome and underrepresented, resulting in lack of engagement.

To counter this, materials now exist to facilitate the incorporation of other cultural traditions into the music classroom (e.g., Campbell, 2018). Most recently, culturally responsive teaching suggests incorporating students’ cultures directly into the music curriculum (Lind & McKoy, 2016). According to this view, music teachers learn about their students’ cultures as both teacher and students develop related activities together. The goal is to position all cultures as equally important and thereby foster an environment of equity and inclusion in the music classroom.

¹ Though commonly used, the term “western” does not accurately describe the multitude of geographically distinct influences that have resulted in music traditions most commonly taught in the United States and elsewhere. The term is the result of a centuries-long racialized ideological project of delimiting “the West” from “the rest” (Said, 1978). We use the term here to identify the cultural tradition that is the outcome of this ideological project.

One challenge to incorporating other musical traditions for music teachers brought up in the western classical tradition is the pedagogical focus on pre-composed music learned through the use of notation. Currently, music teachers typically complete music degrees heavily based upon music notation and verbatim rendering of a piece that does not change from performance to performance. Therefore, it is challenging for those teachers to incorporate music from cultures that rely less on notation or where each performance is less predetermined than in the western tradition. However, the traditional view that music is either composed or improvised obscures the reality of music performance in non-western cultures for which neither of those labels may be appropriate. The goal of the current study was to elicit qualitative descriptions of the thinking behind improvisation from advanced improvisers from different cultures. Our hope is that this information may aid the music education community in incorporating elements from those traditions in the standard music curriculum. In particular, we focus on specific strategies that may be common across cultures and therefore could be more easily understood by educators from different backgrounds.

Current music making and music learning in many schools is surely influenced by the relative fixity of musical performances in Western contexts, including classical music and even many pop/rock genres, where the tendency is for musical performances of the same musical work to be relatively fixed. This state of affairs is quite different from the world's musical traditions: there is a continuum ranging from relative fixity in performance to relative flexibility (Nettl, 1974). Scholarship that is cross-cultural in perspective defines improvisation broadly as composition-in-performance (Finnegan, 1977), a phenomenon that is at “one end of a continuum that has at its other end what we generally gloss as interpretation” (Solis 2009, p. 17 ; see also Nettl, 1974). Improvisation is rooted in communicative musicality—the ability to react, respond,

and create in real time as one rhythmically entrains one's body and voice with others (Malloch & Trevarthen, 2009). This ability is a core facet of human communication that is evident even in spontaneous mother-infant interaction (Gratier & Apter-Danon 2009; Takada 2012). Musical traditions build upon such basic human abilities. These traditions vary considerably in the degree to which they recognize, encourage, and tolerate creative variation and also in whether or not they describe this creative variation as being an aspect of performance that is distinct from the reproduction of a set work (Duranti & Black, 2012). That is, some performance traditions may state that they do not improvise and yet include some creative variation in performance (for instance, Balinese Gamelan music) (Gray, 2010). Other traditions, including those discussed in this article, include some concept of composition-in-performance as a recognized and defined part of performance practice. Though this study focuses on the latter type of musical tradition, the implications of the study may also be relevant to broader conceptualizations of improvisation.

In addition, though many associate the European classical tradition with written compositions and little improvisation. Interestingly, the situation up until the nineteenth century was considerably different: musical apprentices in Europe memorized formulas, patterns, and improvisatory techniques. From the Middle Ages (Berger, 2005) to the eighteenth and even nineteenth centuries (Gjerdingen, 2007; Gooley 2018), musical improvisation and the memorization of stock patterns played a central role in music learning and music making in Europe. In other traditions, the memorization of formulas within modal systems such as Arab maqamat (Farraj & Abu Shumays, 2019) or Indian ragas (Widdess, 2013) continues to constitute a major part of music learning. There, the mode is much more than a scale: it is rather a framework with typical melodic formulas and gestures. Practitioners in American vernacular

genres also rely on a stock of phrase patterns: for instance, Stoia (2013) discusses the storehouse of patterns in early blues and country recordings. Thus, immersion in a common stock of musical patterns is a central aspect of music learning in many cultures, though this is not a prominent part of most K-12 music curriculums outside of jazz instruction. The current classical music tradition's heavy reliance on notation and on verbatim performance is thus, in many ways, an anomaly--both historically and cross-culturally.

While ethnographic research on different cultural traditions of music is common, cross-cultural research in music education is still relatively rare. However, research has explored cross-cultural competence and attitudes among preservice teachers (McKoy, 2013; Teicher, 1997), enculturation effects on music cognition (Demorest et al., 2008; Morrison et al., 2008), potential mediation of enculturation effects (Morrison et al., 2013), the effect of culture on motivational goals and life-long participation in music (Mantie & Tan, 2019; Tan & Miksza, 2018), and potential barriers for North Americans learning music from other cultures (Matsunobu, 2011). Still, to our knowledge, no research within the field of music education has focused on improvisation or improvisational thinking cross-culturally.

We modeled the research paradigm on previous qualitative research on improvisation that has used guided interviews conducted while viewing and listening to just-recorded improvisations (Norgaard, 2011, 2017; Després et al. 2017). Norgaard (2011) interviewed artist-level jazz improvisers and found they engaged in forward-looking planning and evaluation of previously played material throughout their improvisations. Concerning actual strategies underpinning improvisational choices, participants described using pre-learned patterns or shaping material according to the underlying harmonic structure. Després et al. (2017) identified 46 improvisation strategies that were subsequently organized into five categories: preplanning,

conceptual, structural, atmospheric & stylistic, and real time. A goal of the current study was to collect descriptions of thinking related to improvisation from participants from different cultural traditions of music.

Conceptual Framework

In traditions that include well-defined concepts of improvisation, performers often have culturally specific ways of talking about and teaching or learning improvisation. In jazz music, for instance, novices tend to learn a great deal by listening to and reproducing (“transcribing”) recordings of recognized musical stars; this is complemented by a focus on interaction among musicians, which jazz musicians conceptualize as “listening” and “conversation” (Berliner, 1994; Monson, 1996; Sawyer, 2006). In Hindustani instrumental music, an emphasis on *raga* is linked to other “codified” (in other words, articulable) procedures (e.g., Slawek, 1998). These are examples of language about music, which is culturally patterned while also containing clear links to sonic properties and interactive aspects of the music itself (Feld, et al., 2004; Porcello, 2004). In this study, we consider this cultural patterning of talk about music and talk about improvisation as we examine how musicians who are experts in various improvisational styles of music reflect upon their improvisational performances.

This research is based on interviews with these musicians in English with researchers trained in Western musical styles. Such a research design limited the ability of researchers to represent and translate immersive cultural perspectives on each musical style (e.g. through ethnography). However, research participants were themselves experts not only in their musical tradition but also in communicating that musical tradition in English to students and audiences. The research team relied on the expertise of the musicians themselves (rather than that of researchers) to communicate and translate musical traditions for Western audiences.

Furthermore, it is likely that such translations and their interpretations by the researchers will be particularly useful to music teachers, who (as mentioned) are themselves typically only trained in classical and jazz traditions.

Outside music education, cognitive and empirical research on music from different cultures has received increasing attention in recent years (see Jacoby et al., 2020, for a survey of central issues and a recent bibliography). This trend is also occurring in anthropological and psychological research (Broesch et al., 2020). From a cognitive standpoint, there are clear advantages to cross-cultural comparisons: most studies in music cognition have involved Western participants, often undergraduate college students, which biases their results. This remains true even if the cognition of these participants is somewhat representative of listeners enculturated in western genres. Comparative work of a cognitive or empirical nature offers new insights into basic aspects of music perception and organization: for instance, Jacoby and McDermott (2017) study rhythm perception in US participants and in Indigenous Amazonians; Perlman and Krumhansl (1996) compare interval perception in Javanese and Western performers. This comparative, empirical perspective has the potential to evaluate the influence of enculturation on the cognition of music.

Recent critiques of music education and cognition research describe the typical research subject as coming from WEIRD (Western, educated, industrialized, rich and democratic) populations (Heinrich et al., 2010; Jacoby et al., 2020). One problem with a reliance on such subject populations is the tendency to ascribe universal status to behavioral and cognitive patterns that are in reality shaped by particular historical, cultural, and socio-economic trajectories. Another is the common practice of designing research protocols whose assumptions are so based in specific cultural contexts that they are not understood or are non-transposable to

other subject populations and cultural contexts (Broesch et al., 2020). While it is difficult to fully address these critiques, our conceptual framework and research design are rooted in responses to the critiques. In addition to the sample representing several different musical traditions, the following procedures were adopted:

1) We used materials that were less oriented towards any musical system. In particular, the improvisers referred to their own improvisation using a visual aid that is distinct from Western notation, though the aid encoded up as higher pitched, tracked time from left to right, and included references to chromatic pitch categories.

2) Interviews were coded using the basic philosophy of Grounded Theory in which only the meaning of the interview quotation is considered. Specifically, prior categories identified in previous research related to strategies (e.g., from Norgaard, 2011 or Després et al., 2017) were not considered in the initial coding and category formation. All interviews were coded by the second author who did not participate in any related previous research. The researchers' positionalities and previous musical training surely shaped the coding. However, this is true no matter the positioning of researchers and research subjects. There is no "view from nowhere." The goal in cross-cultural research should not be to find a view from nowhere, but rather to reflect upon and understand the ways that the perspectives of and relationships between researchers and research participants shape cross-cultural research in general and this project in particular (Bernard & Gravlee, 2014).

3) Verbal prompts were written in a way to give the research subject maximum flexibility in determining (a) what to perform and (b) how to frame their discussion of their performance.

Methods

Sample

We recruited participants through word-of-mouth within a large US metropolitan area. We contacted various music communities representing different traditions and solicited names of performers whose skill in improvisation was highly regarded. We then contacted potential participants and explained that we were studying improvisation across different musical traditions. Once they agreed to participate in our study, we scheduled an individual appointment for data collection. We explained the procedure. We asked participants to record a solo performance that contained a large degree of improvisation within their cultural tradition, followed by a related interview. They were invited to bring their instrument of choice to the recording session that took place in the office of one of the authors. The setting was modified in minor ways to allow the performer a more comfortable space for music-making. For instance, a rug was provided to several participants who performed sitting on the floor. Prior to their musical performance, participants filled out informed consent forms and a questionnaire in which they self-reported background information. Participants' backgrounds are summarized in Table 1. Nine of the participants self-identified as male, one as female, and one did not answer. For the purpose of this study, performance level is based on self-reported years of performance experience ($M = 20.2$, $SD = 11.6$) in addition to their standing in their local music community. Data from one participant was collected but excluded from the analysis as self-report later indicated a lack of knowledge of the represented musical tradition.

[INSERT TABLE 1]

Interview protocol

The initial verbal instruction to each participant was: “Play a piece that involves a significant degree of improvisatory freedom, which is also appropriate as a solo performance in your musical tradition.” At the end of the improvised performance, the researchers generated a visual representation of the improvisation using the audio software Melodyne (Fig. 1) for melodic instruments. For subject 8, who played the piano, we simply visualized the captured MIDI information using a standard piano roll view. For subjects 9, 10 and 12, who played percussion instruments, we showed the audio waveform. The length of the initial improvisation was around 3-5 minutes ($M = 258$ sec., $SD = 73$). Following the performance, each participant was asked to reflect on their improvisation while listening to the original audio and looking at the visual representation. The interviews were initiated as follows (modified from Norgaard, 2011): “Listening back to your improvisation, try to narrate what was going on in your head while you played. We are very interested in hearing anything you can tell us. Try to answer questions such as ‘Where did that idea come from?’ or ‘What was I thinking at that specific moment?’ At any point, you can pause the playback, using the spacebar, so that you can verbalize your ideas. We might also pause the recording at certain moments.” Apart from the script initiating the interviews, we did not have additional questions prepared in advance. However, we asked questions intended to clarify the participants’ comments using the guidelines of responsive interviewing (Rubin & Rubin, 2005), which allow for follow-up questions to themes introduced by the interviewee and for probes to keep the conversation on the topic. A subset of the participants also engaged in a second interview at the end of the session in which one of the authors asked about their musical background. Data from those sessions will be analyzed and presented elsewhere.

[INSERT FIGURE 1]

Data analysis

All verbal information from the main interviews were transcribed by assistants to the first author. The length of the interviews was around one hour ($M = 60$ min., $SD = 9.9$) The transcripts were checked for accuracy by the other authors and technical terms related to specific music traditions were corrected by an outside expert. Each transcribed interview was typically around 30 pages of text (Min = 18, Max = 46).

Eleven interviews were coded within the qualitative analysis software Atlas.ti (Version 9.1.1). The second author watched a video recording of each interview while listening to its accompanying audio. These videos included an improvisational performance by each participant followed by the semi-structured interview. Additionally, the written transcript of the dialogue included in the interview accompanied the video within the software. As the second author watched each video, he listened to the audio and followed along in the written transcript, coding written content in the transcript that related to musical structure, choice, or pedagogy. There were no explicit research questions in mind as the researcher coded this material. Rather, the codes emerged in an exploratory effort to characterize how the participants believed they had generated the musical content in their respective improvisations.

The primary focus of the coding procedure was to identify and characterize statements in which participants suggested strategies and thought processes that supported their improvisations. However, statements that informed or characterized those strategies and thought processes were also coded. These included – but were not limited to – traditional concepts, references to learned musical structures (songs, melodies, licks, etc.), methods of learning to perform/improvise, mental attributions (conscious/deliberate, unconscious), and constraints that

affected the performance (tradition, aesthetics, audience, time, etc.). The coding process did not use an a priori coding frame. In other words, the relevant conceptual distinctions between codes were not established prior to the coding of the interviews. Rather, codes arose from the researcher's active interpretation of the material. The second author is a musician with a background in jazz improvisation. However, he was not familiar with the research literature on improvisation before coding. Nonetheless, as with any coding exercise, the generated codes are shaped by the cultural perspectives of the coder(s) (for instance, the use of the code "licks" to refer to stock melodic phrases), in this case including Western cultural notions about improvisation.

Results

The second author generated 240 codes from a total of 892 quotations across the 11 interviews. After the initial coding procedure, the second author began to group codes of similar content in an attempt to distill conceptual categories from the data. He generated 72 code groups total. Of these groups, 33 reflect strategies that the participants used in order to generate their improvisations (STRAT groups). Another important code group included several codes that documented constraints that the participants reported affected their performances. The main analysis investigated the extent to which the 11 interviews shared codes from each of the 33 STRAT groups and the single Constraints group (see online supplement). The second author used the code-document table in Atlas.ti to identify which code groups were most common across all interviews. Those code groups which were both implicated in at least eight of the 11 interviews and were grounded in at least 25 total quotations were the subject of further analysis.

Thirteen code groups met this threshold (STRAT-Aesthetics (11), -Licks (11), -Reaction (11), -Communication (10), -Influences (10), -Planning (10), -Emotion (9), -Repetition (9), -

Transition (9), -Variety (9), -Intuition (8), -Varied Repetition (8), and Constraints (11)). The most robust findings were from the STRAT-Aesthetics, -Licks, -Reaction and Constraints groups. Each interview contained at least one code from each of these code groups.

Subsequently, the second author looked at individual codes within these groups to explore more specific similarities among interviews. Perhaps the most striking finding, here, is that the individual Licks and Musical Reaction codes were also in all 11 interviews. Ten other individual codes were in at least 8 interviews and grounded in at least 25 quotations. These were:

Conscious/Deliberate (present in 10 interviews), Pedagogy (10), Aesthetic Constraint (9), Articulation (9), Compositional Organization (9), Mixed Influence (9), Traditional Constraints (9), Harmonic Constraint (8), Intuition (8), and Repetition (8). In order to establish if any two codes systematically co-occurred across 8 or more interviews, the second author performed a code co-occurrence analysis in Atlas.ti. No code co-occurrences met this criterion.

To organize similarities that the researchers identified, we sorted shared code groups and codes into two broad categories: 1) those that characterize *how* participants came to play what they did; and 2) those that characterize *why* participants played what they did. We further sorted the “how” codes/groups into two categories: a) those that reflect pre-learned material; and b) those that reflect in-the-moment processing. The following results are organized in this way and traverse eight main themes: Licks, and Conventions (How-Pre-learned); Reaction, Forward Looking, and Repetition & Variety (How-In-the-Moment); and Aesthetics, Communication, and Emotion (Why).

How: Pre-Learned

Two themes reflect the use of pre-learned material. These themes are Licks and Conventions. The term “licks” is highly specific to ways of talking about jazz improvisation, but

here we apply the concept more generally to refer to the use of pre-learned phrases. Since the individual Licks code was in all 11 interviews, the data suggest that use of pre-learned phrases is common across the musical traditions sampled. However, there are several types of phrases that qualify as a lick in our analysis. One participant claimed that he used a particular pattern “a lot” but was “not sure where it comes from” (sub8). In contrast, another participant explained that he got a pattern from a particular solo that he “wrote out...note for note” (sub10). Pre-learned phrases, then, are not necessarily verbatim references learned from specific musicians, though they can be. Other pre-learned phrases reflected patterns derived from pitch collections common in the style (e.g. scales). For example, one participant used “an important structure” in his tradition where a “certain area of the scale” is “modified” (sub5). Many were variations on popular phrases used within a tradition or material that participants liked, or learned from other musicians and/or teachers. One participant claimed that some of the phrases he played he had heard “many many many times” from “masters” in his tradition (sub1). Another participant explained that he built on phrases that he borrowed from one of his “favorite Bouzouki players” (sub6).

The second theme, Conventions, refers to pre-learned material about performance structure and harmony. Throughout their performances, participants used phrases that transitioned between different sections or different ideas. For example, one participant claimed that “for the next phrase I kind of changed and I wanted to do some tanam so I had a transition between them” (sub3). Another participant explained that he used “sinewy connections between things that...make a statement” (sub4). Percussion performances also used lead-in phrases and fills that transitioned between ideas. One participant explained that one of the “skills of a tabla player is to be able to...do something before coming to the...downbeat” (sub12). Another

percussionist claimed that he used a “fill to go back to samba” (sub9). Importantly, all the non-percussive performances observed constraints of pitch structure, playing within a scale or mode that participants established for the performance. For example, one participant explained that he played in a particular pitch region to avoid “spoiling his modal” (sub1). Similarly, another participant avoided staying on a particular note because “if you...stand in G flat too much you go away as a scale...you have to keep the same area of the scale.” (sub2).

The prevalence of these two themes offers a reply to the question: how did participants come to play what they did? It appears that all participants used pre-learned phrases (“licks”) and most drew from cultural knowledge of traditions of performance structure and/or pitch structure to create their improvisations.

How: In-the-Moment

Three themes reflect the use of in-the-moment processing. These themes are Reaction, Forward Looking, and Repetition and Variety. The first and most prevalent theme, Reaction, was present in all of the interviews. Like Licks, this theme suggests our assessment of a strategy common across the musical traditions sampled. This theme reflects a process whereby participants react in-the-moment to material they played prior in the same performance. Like the Licks theme, however, there are several ways in which participants reacted to what they had played prior. Some reactions were as simple as repetition. However, many participants described their choices – even if only repetition – as logical continuations of material that they had played before. For example, one participant explained that “there are logical sequencing patterns” contained in his performance (sub1). Another participant explained that he used repetition to “create some logic so that it’s not just one lick after the next” (sub4). Similarly, one participant described a choice as an “explanation” of an earlier phrase (sub5). A few participants created

what they called “mirror images” of earlier phrases as they performed (sub12, sub3). And one participant formed musical structures by assimilating earlier phrases into larger movements. She explained that “you take one note, you add some to the bottom, then add some to the top and then you build patterns off of that” (sub3).

Other reactions were attempts to contrast material that was played prior. For example, one participant slowed down after thinking “I’ve been speeding this whole time” (Sub6); another participant added “more space” after coming out of a “very dense section” with a lot of notes (sub10); and others returned to something more traditional (sub4) or groove-oriented (sub9) after a section they described as “wild” or “crazy.” Mistakes or an imperfect execution of an idea also prompted reactions from participants. For example, one participant explained that they tried “to add something to distract from...[a] mistake” (sub8). Another participant explained that he re-attempted a phrase because “the first time it didn’t come properly” (sub1).

The second theme, Forward Looking, describes moments where participants thought in-the-moment about what they wanted to do next. For example, one participant explained that while he performed he was thinking “what should I do next to make a graceful ending” (sub12). Sometimes as participants decided what to do next they also performed in ways that facilitated their intentions.² For example, one participant explained that he suspended D with E because he “eventually [wanted to] go back to D” (sub5). Another participant claimed, “I knew that’s how I wanted to end...[so] I knew I needed to get back to C-major to do that” (sub8). Others attempted to play something that would serve as a foundation for a later idea that they wanted to realize. For example, one participant explained that “this is the baseline, everything else that I play after

² While we use “intend” and “intention” throughout this article, this is not meant to imply that improvisers were always fully cognizant of each strategy or choice made in the moment of performance. Rather, we adopt an anthropological model of intention to be a vector of aboutness or orientation that involves varying levels of consciousness and reflection at different moments (Duranti, 2006a).

this is an improvisation on what I know about this line” (sub3). Another explained that he was “trying to...establish some motifs to build across later” (sub7). Other times participants simply played in a way that they anticipated would give them more options later. For example, one participant explained that he likes to use chromaticism because it gives him the “option to do something else” (sub2).

The third theme is Repetition & Variety. As mentioned in the Reaction theme, participants often repeated themselves. However, they repeated material for many reasons. For example, one participant claimed, “I liked how it sounded the first time...so I did it again” (sub3). But at other times, this participant used repetition because she “wanted people to know” that she was building a pattern, because she was trying to decide what to do next, or because she wanted to cover a mistake (sub3). Other participants used repetition as an “intensifier” (sub4) or to “resolve a phrase” (sub6); and one claimed that “when you repeat...many times, it’s so beautiful” (sub1). However, participants often did not repeat themselves verbatim, but rather, varied previously played material. It seems that, throughout their performances, participants struck a balance between repetition and variety. One participant offered a motivation for this sentiment claiming that “they say...we humans enjoy equal parts repetition, and surprise” (sub4). This is consistent with comments from other participants. For example, one participant justified a variation by saying that she “thought it would be too repetitive if I continued after that” (sub3). Other participants claimed that “you don’t want to be too repetitive” (sub6) and that “I have to do something different” (sub10). This suggests an in-the-moment process where participants made judgments about when to simply repeat something and when to play a variation on something that came before.

The prevalence of these three themes, again, offers a reply to the question: how did participants come to play what they did? It appears that – in-the-moment – all participants reacted to material that they had played prior; and that most attempted, in-the-moment, to shape future parts of the performance while balancing repetition and variety.

Why

Three themes suggest possible reasons why participants played something in particular. These themes are Aesthetics, Communication, and Emotion. The first theme, Aesthetics, reflects participants' intention for their performance to exemplify properties that they or their tradition suppose make for "good art." Aesthetic considerations guided performances in many ways. Broadly, they suggested a need for internal consistency faithful to traditional aesthetic standards but perhaps also faithful to each musician's personal aesthetic standards. Narrowly, they favored interesting (sub12, 2, 3, 4, 8), complex (sub5), characteristic (sub5), entertaining (sub4), decorated (sub2, 10), graceful (sub12), rich (sub6), impactful (sub12), honest (sub10), or beautiful (sub12, 1, 3) performances. Consistent with the comments above on Repetition & Variety, many participants intended for their performance to be interesting and coherent. For example, one participant claimed that playing "the same thing would be boring, you have to change" (sub2). Another participant explained that he tries to "get people's attention" and to be entertaining (sub4). Others try to keep the performance from being "monotonous" (sub12, sub8). At the same time, participants often wanted their performance to be coherent. For example, one participant explained that she was "incorporating everything together" (sub3). Another attempted to "create a concept over the craziness" (sub9).

The second theme, Communication, reflects participants' intention to communicate through their performance. Participants attempted to communicate many things as they

improvised. Performances sometimes communicated emotions (sub12, 1, 2, 4, 5), characteristics of other instruments (Sub1, 3, 4, 5, 8, 9), features of conversation (Sub4, 9, 10), animal noises (sub4), water (sub4), melodies (Sub1, 3, 4, 10), the intentionality of the performer (Sub12, 3, 10) or the skill/knowledge of the performer (sub12, 3). For example, one participant explained that he used vibrato to give the performance “more sadness” (sub2). Another participant mimicked an entire percussion ensemble performance one would find in parades in Brazil (sub9). Others used “call and response” phrasing that mimicked the flow of a conversation (sub4, 9, 10). One participant mimicked the “crow of the rooster” and attempted to suggest “a wet sort of effect” (sub4). Others established that they were playing particular ragas by using “known phrases” (sub1, 3). One participant attempted to “convey the...phrase of [a] specific melody” (sub10). And one participant explained that his improvisation should demonstrate discipline in a way that “nobody thinks...is random” (sub12).

The third theme, Emotion, reflects more broadly the way emotions – whether the performer’s, or an audience’s – affected participants’ choices. The emotion theme relates to both aesthetics and communication but does not fit neatly into either category. A performer may consider good music to be music expressive of emotion. For example, one participant claimed that “emotion is very important” and can compensate for a “lack of virtuosity” in a performance (sub5). However, more generally the emotions of the performer can bias the way they perform. For example, many noted that their own feelings affect how they perform. One participant played something relaxed because it suited his mood that morning (sub7). Another stopped his performance when some “frustration happened” after a mistake (sub9). One participant clearly intended to express the emotion he experienced at the time of the performance. He explained that he was “a little bit sad” and wanted “to play something coming inside...to get it out” (sub2). At

the same time, other participants expressed emotions without personally experiencing those emotions. For example, one participant described a phrase as “expressing some aggression” (sub5). Another participant played a phrase that he described as “mournful” (sub4). But, in these cases, the participants were in neither aggressive nor mournful emotional states. Performers sometimes also structured their performance to manipulate their own emotions. For example, two participants began their performances by playing what they believed would help them “relax” (sub7, 9). Another participant played in a way to avoid negative emotions like “frustration” and “boredom” that might have made him play worse (sub10).

The prevalence of these three themes suggests a reply to the question: why did participants play what they did? It suggests that, for the most part, participants intended to make good art as they understood it, or to communicate something. Fulfilling either of these intentions might have required that a participant allowed their emotions to guide and emerge in the music. However, participants were guided by emotion without necessarily thinking it was important for art’s or communication’s sake.

Discussion

This study explores descriptions of thinking behind musical improvisations by practitioners from different cultural traditions. The descriptions were based on interviews conducted immediately after the completion of a solo improvisation in their musical tradition. The traditions and instruments represented in our study are listed in table 1. Our thematic coding indicated conceptual categories and specific codes that occurred across all or many of the interviews. Of the two themes that reflect the use of pre-learned material, Licks and Conventions, the individual code Licks was one of only two codes that occurred across all 11 interviews. The themes that reflected in-the-moment processing were Reaction, Forward

Looking, and Repetition and Variety and the themes that suggest reasons behind decisions were Aesthetics, Communication, and Emotion. As noted above, some of these themes are not mutually exclusive but may be partially overlapping. For example, some of the strategies coded as in-the-moment forward planning are likely prelearned. Repetition and Variety may be guided by prelearned convention rules that then again are based on aesthetic judgements. Future research could use our methodology with only representatives from one tradition in tandem with ethnographic fieldwork to further investigate unique features of improvisations within that tradition.

The use of pre-learned melodic material was mentioned by all participants. As noted above, research on improvisation within specific traditions has indeed documented use of patterns within jazz (Henry et al., 2020; Norgaard, 2011, 2014), Western classical (Berkowitz, 2010), Indian classical (e.g. Viswanathan, 1977), and Iranian music (Nettl, 2009). Collections of patterns have been described as “the building blocks which tradition accumulates, and which musicians within the tradition make use of, choosing from among them, combining, recombining, and rearranging them” (Nettl, 1974, p. 13). Jazz musicians describe inserting copies of prelearned material in ongoing improvisations that are often adapted to the current context (Norgaard, 2011). Similarly, the Yugoslav epic tradition uses short musical phrases as building blocks (Lord, 2000), while West African drum ensembles employ and juxtapose rhythmic motifs (Nettl, 1974). The theme pre-learned “Conventions” appears to broadly encompass the use of musical rules and stylistic conventions. It is widely accepted that the rules embedded in western tonal music guide improvisations in that tradition (Berkowitz, 2010; Johnson-Laird, 2002). Similarly, the Raga system in Indian classical music (Bor, 1999) and Arab maqamat (Farraj & Abu Shumays 2019) specifically constrain choices. This also matches

anthropological research that argues that creative novelty is meaningful to others due to a partial reliance on previously existing materials and traditions (Lavie et al., 1993; Wilf, 2012).

The themes that reflect processing in the moment are similar to descriptions found in previous investigations using reflective interviews with improvisers based on a just-completed improvisation. Indeed, jazz musicians describe both a forward-looking planning and a backward-looking evaluation process (Norgaard, 2011) and improvisers from the Western Classical tradition similarly plan upcoming passages (Despres et al., 2017). According to this research, planning may occur in the moment but could also be a product of personal habits and stylistic convention. Indeed, Despres et al. identified a separate strategy category named “realtime,” and Norgaard (2011) quoted examples where the planning occurs prior to the start of the improvisation. To our knowledge, this is the first time the current interview paradigm has been used with improvisers outside the western classical and jazz traditions.

Finally, a large body of literature in anthropology and sociology examines how emotions and aesthetics are shaped by culture (e.g. Berger, 2009; DeNora, 2001; Lutz, 1986), while scholarship on communication in improvisation likewise indicates a strong culturally-specific component to its organization (Duranti & Black, 2012). These broader, more implicit cultural patterns, which often remain at or below the level of consciousness, nonetheless seem to guide musicians’ choices and intentions in ways that produce culturally-specific improvisations. Interested readers should refer to Nettle (2016) and other chapters in that series. Our findings support the idea that as musicians learn cultural traditions of improvisation, they also learn embodied, habitual associations of aesthetics with emotional and even moral valences (Caton 1990; Duranti 2006b). These aesthetic-emotional-moral connections may then become productive constraints that shape improvisational choices.

The current results may suggest that musical improvisation is constrained by motoric, cognitive, and social limitations that are common across all of humanity. Indeed, Norgaard et al. (2016), argued that the insertion of prelearned material into jazz improvisations allows jazz musicians to focus elsewhere during improvisation by lowering cognitive load. Similarly, Johnson-Laird (2002) argued that the use of musical rules, such as scales, may limit cognitive requirements related to real-time creation. At the same time, these cognitive constraints, rules, and conventions are also productive and necessary in that they create a shared social space for meaning-making (Strauss & Quinn, 1997). The current qualitative descriptions from across several musical traditions suggest that these constraints are not specific to the jazz traditions and indeed may facilitate real-time creation in many traditions. This aligns with the often cited theoretical framework for musical improvisation suggested by Pressing (1988) that is not linked to a specific style of music. Current brain imaging research on music improvisation has focused on western tonal music (Beaty, 2015; Loui, 2018). The current research could be used to formulate specific hypotheses related to cognitive processes involved in music improvisation across traditions that could be investigated using experimental or neuroimaging paradigms.

Two important aspects of improvisation were not examined in our study, though these topics were raised in explanations given by participants: interaction with other performers and interaction with audiences. Previous scholarship on jazz improvisation emphasizes the significance of these two types of responsiveness to context for the temporal unfolding of unique improvisational performances (e.g., Berger, 1999; Black, 2008; Monson 1996; Sawyer 2006). We anticipate that the analysis of interaction among performers and with audiences would yield additional insights of significance for cross-cultural understandings of improvisation and provide

additional tools for music educators to incorporate distinct cultural traditions of improvisation into their curriculum.

One obvious factor in our study is that our participants live in a major metropolitan area in the United States and are conversant and competent in Western ways of thinking about music and communicating about it in English. While their training in their respective traditions has led to considerable expertise in those traditions, their ways of thinking about music—and in particular about improvisation—might be influenced by western ways of thinking about improvisation. It is also interesting that some of our participants have expertise in performance within the western classical tradition. Participants had well-developed ideas about how and why they kept their musical tradition separate from the influence of other traditions. This phenomenon - maintenance of distinction of improvisational traditions - is a topic for future research. In contrast to our participants' competence in western ways of conceptualizing music, the members of our own research team are outsiders to the musical traditions in question: while we have considerable expertise in jazz and American vernacular traditions, for instance, we are all outsiders to the Carnatic tradition of south India. However, this outsider's perspective is a common challenge in ethnomusicology and indeed famed ethnographic scholar, Bruno Nettl (2016) noted "there is a good deal to be learned between the contrast of perspectives" (p. 179) between the investigator's analytical perspective and the cultural bearer. Furthermore, as noted at the beginning of this article, this relationship between researcher and participant expertise allowed for a different sort of conversation to take place—a conversation in which participants did the same explanatory work they often did during lessons with students and performances for American audiences. This reliance on participants' translating communicative expertise led to

results that may be especially useful for music educators trained in European classical and jazz traditions.

Another concern with our study is that the research setting was equal across the participants, but the performance situation was not ecologically valid for some of the musical cultures studied. For instance, traditional Arab musicians expect audience members to be reactive, which feeds back into their playing (see Racy, 1998). We did not provide such audience interaction during the performance preceding the interview. Future research could expand the current paradigm to include ethnographic fieldwork and/or a more ecologically valid performance situation where interaction between groups of musicians and between musicians and audience would be explored. Finally, we should note that only one of the eleven participants was a woman and that performance level was varied. Recruitment for this study was difficult for several reasons including the intimacy of an interview setting, the required time, the requirement to attend in a central specified location, and the limited number of potential musical experts available within driving distance of the central location.

One of the most challenging aspects of incorporating music from different traditions in the music education curriculum is the issue of authenticity. How would an educator with a background in the western classical tradition introduce students to improvisation within other musical traditions? An obvious answer would be to invite an expert from that tradition to visit and/or to incorporate some of the materials finally becoming available (e.g. Campbell, 2018). The current study highlights other ways that educators could incorporate certain elements with which the educator may be familiar. For example, the Indian classical tradition uses collections of pitches, Ragas, that are similar to western scales. These ragas often incorporate specific conventions about how particular notes in the raga should be approached. Here we argue that the

benefit of introducing ragas to students in a large performance ensemble in participatory exercises outweighs concerns about authenticity. In this example, students in the class with a background related to this tradition may feel more included (Lind & McKoy, 2016). These students could also be invited to but not required to add other materials about the tradition with which they are familiar. Importantly, we found that in the context of a large metropolitan center in the U.S., cultural bearers from non-Western musical traditions were both willing and excited to share insights into their musical thinking (see also Duranti & Burrell, 2004). They went to great lengths to make sure we understood the intricacies of their traditions. We believe this type of exchange could occur in the music classroom and suggest that the exchanges at the center of the current research could inspire other educators to engage in similar dialogues across traditions.

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Sub ject #	Age at interview	Birth Country	Performance experience (years)	Teaching others	Instrument today	Tradition group	Are you familiar with systems of notations? Degree of familiarity (5=very familiar, 1=minimal familiarity)
1	51	India	30	15	Violin	Indian Classical	"Carnatic notation", learned to play by ear
2	53	Israel	25	25	Oud	Arabic	Western (5=very), Older Arabic notation (5=very)
3	21	India	10	3	Veena	Indian Classical	western (5), Carnatic (5)
4	61	USA	40	20	Fiddle	Old Time Fiddle	100% ear, but use notation for teaching
5	48	Greece	35	15	Acoustic guitar	Greek	Byzantine (5), Western (5), Arabic (5)
6	21	Greece	4	0	Bouzouki	Greek	Western (2=not very familiar)
7	33	USA	20	0	Saxophone	Jazz	Western (5), Jazz chord symbols (5)
8	33	USA	15	10	Piano	Western Classical (organ)	Western notation (5)
9	35	Brazil	23	15	Pandeiro (Brazilian tambourine)	Brazilian	Western (5)
10	28	USA	10	6	Drum set	Jazz	Western (5)
12	44	India	10	5	Tabla	Indian Classical	no

Table 1. Participant information

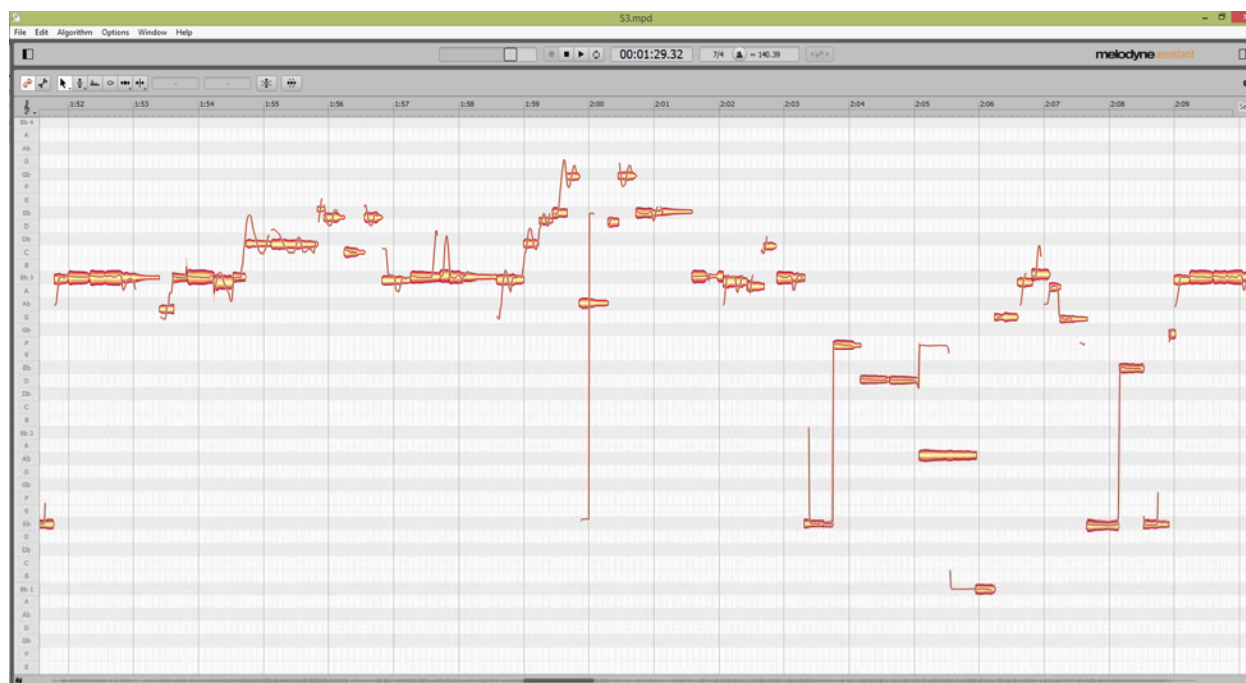


Figure 1. Screen shot of the visual representation of the audio created.