

GENERATING IDEAS IN JAZZ IMPROVISATION: WHERE THEORY MEETS PRACTICE

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Abstract

Idea generation is an integral component of jazz improvising. This article merges theoretical origins and practical experiences through the examination of two seminal works from Pressing and Sudnow. A comparative analysis yields three common sources with distinct characteristics. The greater body of jazz literature supports this potential link between 'knowing' and 'doing' viewed through the new filter of sources. The discussion concludes with a projection of how the properties of the sources may directly affect contemporary educational practice in jazz improvisation.

KEYWORDS: cognitive processing, idea generation, improvisation, Pressing, Sudnow

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This article arose from a moment in music education where theory met practice with surprising clarity. It occurred at a jazz jam session where an instrumentalist made an uncharacteristic plea to the band. He wanted to put down his trumpet and sing instead. After scatting through a chorus of 'Bye Bye Blackbird', he was asked, 'when you were singing, did you come up with ideas the same way as when you improvised on trumpet?' He reflected on the two experiences then replied, 'no, it was different.'

This illustration illuminates two significant aspects of the thinking which take place during jazz improvisation. When it comes to generating musical ideas, first, different sources can be utilized, and second, the selection of a source is contextual. The deductions raise interesting questions for jazz educators: What are the differing sources of idea generation that the trumpeter used? Why did a change from instrument to voice trigger a change of source selection? Does source selection change as improvisational skills develop? The answers to these questions carry ramifications for jazz curriculum. If we discover, for example, that singers frequently select a different source of idea generation from instrumentalists, then it could be helpful to consider how we allocate teaching time to these distinct subgroups. Alternatively, if a beginner's preference of source differs from an advanced improviser's, then a corresponding change in curriculum emphasis seems desirable during each developmental stage. However, none of the issues can be adequately addressed without first exploring if categories of sources of idea generation exist and if so, identifying their characteristics. The purpose of this paper, therefore, is to provide that rudimentary step of categorizing possible sources and discerning their properties.

The paper is divided into three sections. To begin, a foundation in idea generation in improvisation is explored through the examination of two seminal works: Pressing's (1988) theoretical model of improvisational thinking and Sudnow's (2001) sociological study of learning to improvise. A comparison of the two provides a unique and pragmatic link between 'knowing' and 'doing' which yields key concepts. Three distinct sources of idea generation are identified and their properties are discussed and supported with references to the greater body of jazz literature. Finally suggestions are made on the effect knowledge of these sources may have on the practice of educating jazz improvisers. To begin, a review of the relevant literature on idea generation in jazz improvisation is presented.

Literature Review

Academic writings incorporating idea generation in jazz improvisation are found typically in the field of cognitive processing. Limb and Braun's study (2008) of neuroimaging of the brain during improvisation notes the common perception that acts of creativity are mysterious behaviors occurring "in an altered state of mind beyond conscious awareness or control" (p. 1). The subconscious nature obscures access to thought processes and thus presents a challenge to researchers to reveal them. One of the earliest attempts to design a formal model of cognitive processing in improvisation is offered by Pressing (1988). He describes improvisation as a series of musical events connected by either congruent or incongruent ideas. In the same publication, Clarke (1988) presents his own three stage model which applies filters of hierarchy, associative and selective thinking on generative processes in music performance with reference to improvisation. Clarke's approach emphasizes the contribution that skill acquisition makes to the process and explores how a performer chooses expressive options. Johnson-Laird's (2002) proposal highlights an internalization and automation of processes in improvisation due to the excessive

computational stress improvisation places on the brain, which suggests sources of ideas are accessed subconsciously. Mendonca and Wallace (2006), in their study of the place of temporal thinking in improvisation, identify idea generation as one type of creative cognition but do not delineate sources. They conclude “further work is needed in understanding the role of knowledge and experience in the production of new musical ideas”.

While concepts of idea generation are incorporated in discussion to various degrees in each of the aforementioned references, source categorization is not specifically distinguished or elaborated. The literature centers on how thinking processes occur rather than the nature of sources from which ideas may be drawn. Pressing’s model however offers itself as a viable template for applying a new filter of investigation into sources of ideas. This is not because of any assumed accuracy of the model but because of the detail it offers and the continued impact it has on thought today as evidenced by recent positive citations (e.g., Norgaard, 2011).

Running parallel to discussions on theories of cognitive processing is a second body of academic literature on the practice of jazz improvisation often in the context of predictors and evaluations of achievement or pedagogical approaches. Even in this material there is little discussion of sources of ideas. Greenagel (1994) and Wadsworth (2005) single out audiation as a skill essential to vocalists, improvising or otherwise, but the connection to idea generation is indirect. Similarly, May’s (2003) research identifies “aural imitation ability” as a predictor of achievements in instrumental improvisation but how the ability translates to practice via sources is omitted.

Some literature offers potential categories but they lack detail or visible association with idea generation. Bash’s (1983) study of effective instructional methods for high school

instrumental students compares analytic and aural as two distinct approaches to learning improvisation although neither were assumed to be sources of ideas. In Eisenberg and Thompson's (2003) research on evaluating improvised music, the researchers postulate the capacity to generate novel musical ideas is subject to cognitive factors but their proposition lacks detail (p. 294). Norgaard's (2011) publication examines different modes of thinking in improvisation but his implications for music education practice straddle the inclusion of generative strategies in a "theory mode", with a "play mode" which shifts the focus from sources to planning and evaluative processes. Characteristics of sources are distributed throughout the paper but ultimately the response to the study's question of "Where did that come from?" emphasizes "how" ideas are generated rather than a comprehensive discussion of "what" is the nature of the accessed source.

In contrast, other studies provide detailed examples of ideas. Madura Ward-Steinman's (2008) study of factors underlying vocal improvisation makes references to "manipulation of dynamics, range, vocal tone color, syllables, melodies and rhythms" but it does not discuss any categorical properties. Likewise, Smith's (2009) evaluation tool for instrumental wind jazz improvisers incorporates assessment of motifs and sequences, without recognition of any broader commonalities of their origins. Watson's (2010) assessment of the effect of instructional materials on learning improvisation measures the use of clichés, sequences and "rhythmic ideas" with the basic separation of sources into aural or notational, again without elaboration.

In general, the literature of improvisation practice points occasionally to macro families of ideas without defined properties or to specific micro ideas without recognition of commonalities in context. The single work with potential for clear observation of sources used during improvising is the writing of Sudnow (2001). This autoethnographic study

provides a window on thinking because of its detail, self-awareness and the extended time period over which it was written. Its diary-like fashion brings us close to the illusive subconscious processes of improvising.

Overall, the literature review reveals two seminal works with sufficient comprehensiveness for analysis of the topic: the theoretical perspective of Pressing (1988) and the practice perspective of Sudnow (2001). Although somewhat dated, they remain comprehensive, seminal and frequently cited works. Their detail, coupled with a general high regard for their contribution, provides counterbalance in a discussion of sources of idea generation. When supported with references to current academic studies and popular culture literature, a picture that connects theory with practice applicable to current music education is revealed.

Methodology

The two seminal works in academic writing (Pressing and Sudnow) were selected as samples in jazz improvisation literature of idea generation in theory and in practice. An initial review of the texts was performed to investigate the perspective and structure of each work separately. They were then analysed to identify direct or indirect references to the topic under investigation. The results of the two analyses were compared and consistencies were found in references to sources used in improvisation. From this datum, three distinct categories of sources and their defining characteristics emerged. Recent studies and anecdotal references were then perused to determine if there was any measure of support for these proposed categories. Finally, projections were made as to how the knowledge of such sources may impact on the practice of educating jazz improvisers.

Presenting Pressing and Sudnow's perspectives

Pressing's (1988) 'Improvisation: methods and models' made a notable contribution to jazz research as one of the earliest published cognitive models of improvising. His extensive cross-disciplinary reading melds facets of physiology, neuropsychology, motor programming, and skill development with a discussion of intuition and creativity. One theme arising from his writing that is relevant to this article is the relationship between motor programming and the act of improvising. His complex discussion of the topic can be reduced to its simplest form as follows: The improviser generates an idea, the brain creates a plan (motor schema) of how to make the body produce the idea, the body then enacts the plan and musical output is generated. A flow chart can be extrapolated to demonstrate the relationship (see Figure 1).

A second theme addressed by Pressing which shall later be demonstrated as significant is the relationship of redundancy and sensory feedback to motor learning in improvising. Redundancy, he argues, plays a vital role because improvisation is real-time cognitive processing 'often pushed up near its attentional limits' (p. 136). With such extreme demands, there may be little capacity for a performer to process new sensory input (p. 167). The performer who invests time in practice may begin to recognise patterns of redundancy which no longer require occupation of processing time. He proposes that this reduction in novel information allows the musician to redirect attention to higher order thinking skills such as organisation.

Pressing discusses a second avenue of redundancy that occurs from the overlapping of sensory feedback. Feedback is information gathered from the senses which informs us of the results of a performed task. Visual, aural, tactile and kinaesthetic data generated during action allows performers to assess if their intended goal is achieved. Redundancy of feedback occurs when more than one sensory source supplies information on a single

activity. For example, a pianist may ascertain that the note *F#* has been correctly played by looking at the keyboard (visual), hearing it as the note a semitone higher than the *F* that was just played (aural), feeling the narrowness of the black key compared to the white key (tactile), and the movement or positioning of the fingers (kinaesthetic). The inexperienced performer may rely on processing all four pathways of feedback to confirm *F#* was played, whereas the advanced player has such familiarity with the action that only one avenue may be monitored to make the assessment. The remainder of the feedback information becomes redundant and can be discarded, thereby freeing the performer's attention for other purposes. In such a cognitively demanding activity as improvisation, Pressing argues the capacity for redundancy is beneficial.

Pressing makes a passing observation in his discussion of feedback and redundancy: 'Aural, visual, proprioceptive and touch feedback reinforce each other for the instrumental improviser, whereas the vocalist has only hearing and proprioception available...Likewise the design of some instruments allows more precise visual feedback and more categorical kinaesthetic feedback than others.' (p. 135)

Herein lies a clue as to why improvising vocalists may differ from instrumentalists in their selection of source for idea generation. If, as Pressing writes, redundancy frees cognitive processing time for higher order thinking (p. 167), then the vocalist's lack of visual feedback and less explicit kinaesthetic feedback may lengthen the time it takes the learner to reach redundancy. It seems more likely therefore that the ideas singers generate will originate from a source which affords the most accessible and categorical knowledge of results.

Pressing's specific discussion of the origin of musical events in improvisation is given minor attention in the chapter, attributing ideas to sounds from other players, referents,

goals, and memory (p. 160). He notes, '[o]bviously, event generation is informed by a vast panorama of culturally and cognitively based musical processes and stylistic preferences (motivic development, phrase design, historical forms, transposition, rhythmic design, etc.)' (p. 164). The panorama is left unexplored. In a previous publication, he describes an improviser whose impulse to begin an idea comes from 'the surroundings, or may be internally generated' (1984, p. 351) but there is no overt connection to sources of ideas in either publication.

To summarize, Pressing's theoretical model provides potential for exploring differing sources of idea generation. It is helpful however to counterbalance his perspective with an equally intensive examination of jazz improvisation in practice. A review of Sudnow's (2001) text shows how the key concepts identified in Pressing are experienced by Sudnow. This provides an insight into possible sources used in idea generation. Pressing's model is interesting but, in the pragmatic words of Sudnow as he commented on jazz improvisation, '[a]ny theory's relevance depend[s] on its possible bearing for my practice' (2001, p. 18).

Researcher David Sudnow recorded his personal observations of learning jazz improvisation on piano, as he progressed from beginner to advanced player over several years. His contribution to the exploration of sources of idea generation is found in the accessibility of his language for describing his experiences, the sociological self-awareness in his writing, and the extended timeframe over which it was recorded. His reflections were published in 1978 as a book entitled *Ways of the Hand: The Organization of Improvised Conduct*. The work was greeted with some resistance at the time of its original publication, perhaps in part because autoethnography was still gaining acceptance as an academically respected way of understanding.

Sudnow's writing struggles not only with the inadequacy of language to capture constructs but also with the lack of access to the subconscious cognitive processes of improvisation. His vocabulary is accessible, although his frequent creation of new terms couched in half-familiar language (e.g., 'noteness') can be disconcerting. He reveals that some professors described his book as an example of 'the most convoluted writing in print' (2001, p. xvii). Even Sudnow admitted that, when reading his text several years later, there were critical places 'I couldn't easily summarize because I couldn't easily follow them' (2001, p. xvii). This experience ultimately prompted him to re-edit the text with minor changes to increase clarity, while leaving unaltered the developmental narrative and organisation. This second version, released as *Ways of the Hand: A Rewritten Account* (2001), is examined in this article.

The book is divided into three parts, representing Sudnow's perceived phases of development while learning to improvise. Part one, 'Beginnings', describes his developing vocabulary in jazz harmony, improvement in motor skills, and use of sensory feedback. He approaches the need to generate musical ideas from an analytical perspective yet he notes his music lacks a melodic intention to unify the solo. Part two, 'Going for sounds', shows Sudnow's struggle to move beyond selecting 'reasonably acceptable places' and 'gaining manual dexterities' to 'going for music' (pp. 39–40). In this phase, he seeks continuity between ideas to 'make up a family of practices that generate a large percentage of melodic gesturing in all music' (p. 42). He tells us that, at times, melodic intention is generated by attending to preconceived sounds in his head.

In 'Going for jazz' the final phase of Sudnow's development is revealed. He encapsulates the chapter's essence as 'a manner of timing' (p. 70), although perhaps a phrase used later in discussion, 'temporal–spatial synchrony' (p. 108), is more descriptive of

the new experiences he reports. One development relevant to this paper is his description of 'a synchrony of a pianist's vocal and digital intentions' (p. 71), where the ideas he hears in his head synchronise with the actions of his hands.

The detailed record of Sudnow's learning experiences allows insight into his perceived developmental changes. One change of particular interest is the role of audiation. Audiation, as proposed by Gordon (1999), can be defined as a cognitive process by which the brain mentally hears, comprehends, and processes music when sound is not present. While Sudnow does not use any specific substitution for the term, there is ample evidence of the construct in use. Through the progression of Sudnow's experience, we can observe his initial selection of analytical pathways for idea generation without 'really knowing what they would sound like' (p. 62). This transforms into '[taking] my fingers to places so deeply mindful of what they will sound like that I can sing these piano pitches *at the same time*, just as I make contact with the terrain' (p. 129). Sudnow surmises that, while conscious analysis allows the mimicking of jazz expressions, it is ultimately insufficient because there is 'nothing to say' (p. 20). Instead, his pursuit of audiated ideas automatically conceived with intention is, he concludes, a key cognitive process in the generation of ideas for advanced improvisers.

Overall, Sudnow's experiences of learning to improvise demonstrate Pressing's notions of the integral role of motor learning, and the contribution of feedback and redundancy. To these, Sudnow's record adds a developmental perspective and the contribution of audiation to the equation. These writings of Pressing's theory and Sudnow's practice provides an avenue for us to now extrapolate sources of idea generation and cross reference their properties with other jazz literature.

Sources of Idea Generation and Their Properties

The comparison of findings in Pressing and Sudnow yielded three distinct possible sources of idea generation with identifiable characteristics; strategy generated, audition generated and motor generated.

1. Strategy generated Ideas

Strategy generated ideas are those that are consciously formulated and implemented with an intended design. Strategies provide a specific plan for behaviour as a means of solving the compositional demand of improvisation. Pressing describes this approach as giving 'attentional emphasis' to components (1988, p. 162). Sudnow colloquializes it as having nameable places, nameable devices and nameable routes (2001, p. 124). Examples of strategy generated ideas found in Pressing are the use of perfect fourths, rhythmic displacement, and chromatism to create associative events (1988, pp. 162–164). Sudnow describes acquiring 'an increasing mass of principled solutions for knowing where to go with the various chord types' (2001, p. 29).

As a novice improviser, Sudnow recounts his excitement when his teacher furnished him with his first strategy of playing a diminished scale over dominant seventh chords (2001, pp. 21–23). It appears the neatly contained properties of conscious strategies can be analysed, transferred, and applied, which could explain why they are a popular approach for teaching improvisation to beginners. The broader literature in jazz education has many examples in instructional books of strategies to employ when improvising (e.g., Aebersold, 1992, p. 45; Bergonzi, 1998, pp. 66–71; Coker, 1987, pp. 50–53; Crook, 1991, pp. 100–104; Reeves, 2001, pp. 32–34). Kenny and Gellrich (2002, p. 126) declare the chord-scale formulaic method to be the most widely practiced method of teaching jazz improvisation in western education.

Another prominent characteristic of strategy generated ideas is that they do not appear to require musicians to audiate them prior to performance. Sudnow demonstrates this when he chooses a deliberate course of action without being able to foretell how it will sound (e.g., p. 62). This capacity to successfully use strategic directives without the necessity of predicting audiological consequences again is likely to favour beginner improvisers whose skills in audiation are commonly still developing.

Evidence that strategy generated ideas do not require audiation can be found in other literature. Jazz pianist and vocal improvisation educator Michele Weir (Wadsworth, 2005, p. 170) reveals at times while improvising she plays “some things I can’t hear very well yet” demonstrating a use of strategies without audiation. Berliner concluded that in challenging songs “it is not enough for [artists] to rely on their ears” hence players such as Lou Donaldson seek to “work out little patterns” to “get through difficult spots’ (Berliner, 1994, p. 234). As a singer, Judy Niemack (2004, p. 5) experienced difficulties in learning to improvise through the strategic approach. She found that while putting the concepts of music theory into practice was fascinating, ultimately the training was “useless if I couldn’t *hear* it, and I had to hear it to be able to sing it.”

References to the use of strategy generated ideas by musicians are plentiful. Bass player Art Davis describes approaching difficult compositional problems as “chess masters study different moves and plan strategies before a match” (Berliner, 1994, p. 234). In Hargreaves’ (2010) survey of Australian jazz musicians, 59% percent of respondents ($n=107$) indicated they used “deliberate strategies” such as “sequencing, jumping intervals, repetition with variation” as sources of ideas. Berliner (1994, p. 162) describes how “the discovery of scales and their theoretical relationship to chords constitutes a major conceptual breakthrough with immediate application” allowing students to “construct”

ideas and group tonal materials. His writing supports the proposition that strategy generated ideas are devised consciously with intention. Similarly Aebersold's promotion of scales accompanied by the declaration that they give him "more things to choose from" when he improvises, implies his choice of strategies is conscious (Botana & Correa, 2002).

2. Audiation generated Ideas

A second distinguishable source in jazz improvisation are ideas generated from audiation. As discussed previously, Pressing's references to the use of audiation generated ideas are indirect (e.g. p. 150). In contrast, Sudnow's remarks are clear (e.g. p. 62, p. 129). He even titled the second portion of his book "Going for sounds". Audiation generated ideas appear to be unconsciously formulated but presented to the conscious mind in a manner that the brain mentally 'hears' and processes without sound being present.

The uncontrolled formulation of these unconscious ideas prior to their audiated presence is the cause of much bewilderment for students. Jazz practice shows that a deliberate investment of time is often made by improvisers to deposit in their mental storehouse a large quantity of licks, patterns, scales and solos (Berliner, 1994, pp. 95–105). However, the re-emergence of the ideas in the form of audiated fragments during improvisation occurs without conscious direction. As jazz musician and educator Bob Stoloff declares, 'I swear to my students that I don't improvise anything original, as far as I know. I think it's all pieces of stuff that I've heard throughout the years. Sometimes I can even identify it as it's coming out of my mouth, and say "oh my gosh – there's Dizzy Gillespie, there's Oscar Peterson, there's Joe Morello"' (Wadsworth, 2005, p. 118).

Being able to audiate music is naturally a defining characteristic of audiation generated ideas. Another characteristic is that the information presented to the conscious brain is conceived in relative pitch (except in people with perfect pitch). Although musicians

can distinguish a relationship between notes in the form of the melodic shape of the audiated idea, the precise identity of each frequency (known in absolute pitch) is established for most musicians in a separate process of conversion prior to the implementation of a motor program.

It appears the conversion of audiated ideas from relative pitch to absolute pitch occurs via two pathways: conscious or unconscious. In conscious conversion the brain gives attentional focus to identifying pitch by using methods such as calculating intervals or 'working out' notes on an instrument. Unconscious conversion of audiated ideas into absolute pitch — interestingly — is observable in advanced improvisers. In this process, notes (audiated in relative pitch) directly trigger a motor response which is executed in absolute pitch. The process occurs rapidly or simultaneously and the musician does not have conscious access to it. See Figure 2.

Sudnow (2001) recounts his amazement at the development of his ability of unconscious conversion. He explains that he cannot identify the name of a note that is played, or sing a named note on request. However, if he hears or sings an unidentified tone, 'I can then go to the piano and play it on my very first touch of the instrument about eighty percent of the time. So my hands...have almost perfect pitch. My thoughts don't' (p. 63).

Evidence that improvising musicians may "pre-hear" ideas is frequently found in jazz literature (e.g. Berliner, 1994, p. 263; Enstice & Stockhouse, 2004, p. 164; Kratus, 1991, p. 38; Wiskirchen, 1975, p. 74). Kratus (1991, p. 38) names "the skill to hear musical patterns inwardly" as a characteristic of an "expert" improviser. Likewise Coker (2008, p. 11) lists it among his characteristics of a "good" performer. He goes further to say "The point at which we become able to play what we hear in our head is indeed the point at which our progress

increases dramatically” (p. 45). It demonstrates Coker’s belief that accessing and performing audiated ideas is a later developmental phase, which parallel’s Sudnow’s experience.

Discussion of a conversion process of audiated ideas from relative to absolute pitch is also evident in general jazz literature. Vocal improviser Jon Hendricks’ description, recorded in Pellegrinelli (2005, p. 414) implies a three stage process: improvisers pre-hear something, sing something then play something. He labels the singer “the middle man” thus demonstrating the absence of the need for vocalists to convert the idea to absolute pitch, and the necessity for instrumentalists to proceed with the task. In a conversation with jazz legend Chet Baker, Coker (2008, p. 47) related how he hears an “imagined improvisation”, sometimes “catching myself moving my fingers as though I still had the horn in my hands, hearing each pitch as it was being ‘fingered’.” Baker responded by sharing a similar experience of watching a movie and finding himself fingering his trumpet unconsciously as he hears the corresponding pitches.

3. Motor generated Ideas

The third source of ideas in improvisation revealed in the comparative analysis is motor generated. Motor generated ideas are manifested in actions of the body to produce musical output. Here positioning or movement is the primary, unconscious trigger. An illustration is found in Pressing’s text when he is demonstrating associated events (p. 164, example 5). Sudnow’s discussions of the topic are conspicuous, even going as far as endowing his hands with their own identity, sense of reasoning and motivation for action (e.g., ‘the hand set straight out into a course’, p. 35). He gives several examples of producing ideas originating from the position or movement of his body rather than conscious direction or melodic intent. He shares with readers the discovery that his hands have the capacity to make ‘streams of notes’ by ‘keep[ing] the action going’ (p. 59).

An important distinction should be made here between strategy generated ideas with a motor directive and motor generated ideas. The former may employ a conscious engagement of a motor strategy such as deciding to maintain three bunched fingers in a static formation while moving the hand along the keyboard. In contrast, the latter are unconsciously triggered movements. As jazz musician Harold Ousley illustrates, '[s]ometimes the ideas come from my mind and I have to find them quickly on my horn...but other times, I find that I am playing from finger patterns; the fingers give it to you' (Berliner, 1994, p. 190).

Other substantiation of the properties of motor generated ideas can be drawn from broader literature. In a discussion on jazz elements, Coker (2008 p. 24) connects the use of muscle memory with ideas the player does not plan in advance. He notes this use of ideas stemming from "ingrained" behaviour which acknowledges their unconscious nature.

Another distinguishing feature of ideas from this origin is that they do not require prior audiation. The pressure of constant and immediate composition during improvisation may at times make aesthetic and audiological consequences subordinate to the demand for ideas. As Sudnow experienced, motor generated ideas can be utilized without 'really knowing what they would sound like in detail' (p. 62). Support for this property can be found in the literature of Berliner (1994, p. 181), Norgaard (2011, p. 117) and Davis (2004, p. 6) who declares "most" jazz musicians can "let technique take over when inspiration fails to visit them".

Aebersold (Botana & Correa, 2002) regards the potential for motor generated tasks to forgo audiation as a shortcoming, thus confirming his perception audiation is not a property of the source. In the context of encouraging students to draw on audiated ideas, he warns them against finding "that your instrument and your fingers just play phrases

without you having been the originator of those musical phrases". Interestingly, Aebersold's reluctance to recommend motor generated ideas may be challenged by the perspective of Johnson. Johnson (2000, p. 179) declares that "for all improvising musicians there are times when they let their fingers do the talking". He points out that it is yet to be argued that "the habits of the body" are "likely to produce anything less aesthetically valid than the habits of the mind".

The Application of idea generation categories to practice

The categorisation of sources of idea generation provides a neat compartmentalisation yet the exercise may be pointless without connections to practice. It begs the question: do improvisers really need to know where their ideas come from? Possibly not. However, the advantage of music educators being mindful of sources has benefits. The three categories are now revisited wearing a teacher's hat to speculate on applications in educational practice.

Strategy generated ideas in education practice

As discussed earlier, exploration of strategy generated ideas is a popular educational approach to improvisation probably because strategies can be consciously analysed, transferred and applied. For example, the teacher can notate a phrase on the board, explain its components then instruct students to perform it. The expectation is that students may use this idea during their own improvisation. Another likely reason teaching strategies is a common method is because its conscious nature means it can be triggered externally. A teacher can't make students hear something in their head nor activate their motor reflexes. Conversely, a teacher can verbally prompt students during an improvisation to "use sequences" or "augment the rhythm".

Unfortunately, vocalists are at a disadvantage when strategies involve a pitch directive. The absence of visual motor feedback or a fixed point of reference for pitch means asking singers to perform a sequence of ascending tritones represents an entirely different challenge for vocalists than instrumentalists. The vocalist has to apply skills to locate each note on their variable pitch instrument which is literally in the dark. The benefit in the classroom of vocalists acquiring pitch-related strategies for ideas may be subordinate to the more immediate problem of locating notes.

This is not to say strategies should not be taught to vocalists. Instead care should be taken to acknowledge the difficulties pitch-related strategies produce when a curriculum emphasises this approach. Vocalists are likely to lag in the task, face possible alienation or discouragement through no fault of their own. Consequently the strategy generation approach requires extra support for vocalists in acquiring necessary tools for finding pitches.

It would be remiss not to raise the sensitive question of whether teaching pitch location skills to compensate for a physiological shortfall is truly in the best interests of singers. Is the motivation the ease of keeping vocalists in the same class as instrumentalist (thus reducing financial expense) or the sincere belief singers should be equipped to “overcome” the obstacle? Perhaps consideration could be given to enhancing singers’ natural inclination to draw on audiated ideas by encouraging the building of the storehouse. Efforts may be better spent boosting strengths than compensating for weaknesses. The issue invites further enquiry and debate.

Audiation generated ideas in education practice

The subconscious nature of audiation generated ideas makes them inaccessible to the educator as a method of instruction. While educators cannot control which ideas go into

the student's memory nor which come out, they can facilitate an environment to invite the occurrence. Key to developing the use of audiation generation ideas is employing listening to stock the storehouse of ideas and procedures. A frequent method used by educators is transcription where students notate or imitate a jazz master's solo. Evidence suggests the repetitive listening required by the activity embeds ideas in the inner ear.

Another repetitious activity which produces a similar outcome is the performance of motifs and scales in all 12 keys. This activity is frequently undertaken for the purpose of mastering motor programming but it has the side effect of imprinting the sound in the mental storehouse. While the player is mastering the fingering, the ear is hearing the pattern repetitiously through multiple key centres. The benefit of transcription is obvious to instrumentalists and vocalists however the benefits of the twelve key approach for audiation purposes is a little more abstract. Vocalists may need to adjust their thinking of it as a motor learning activity to an opportunity to develop audiation generation.

Audiation generated ideas also create a unique challenge for instrumentalists. Conceived in relative pitch, instrumentalists are faced with the need to convert ideas to absolute pitch for performance on an instrument. The conversion between having sounds in their heads and reproducing them on an instrument begins consciously, slowly and somewhat painfully. Teachers may notice a tendency for instrumental students to rely on strategy generated ideas as they have an increased chance of hitting "acceptable" notes. The educator's role may be to encourage players to tune in to their inner hearing as another rich avenue for ideas.

Motor generated ideas in education practice

The characteristics of motor generated ideas means it sits somewhat in educational approach between the other two sources. Like audiation, it occurs subconsciously, relying

on personal motor reflex and is therefore not directly accessible for teaching. The educator can create opportunities for students to improve motor skills, but the actual use of them as a source for idea generation cannot be controlled. The characteristic motor generation shares with strategy is that neither require ideas to be audiated prior to performance. Consequently the approach does tend to favour instrumentalists although closer examination reveals an additional reason for the bias.

Motor generated ideas arise from motor programs. Players of most tuned instruments can isolate the movement of specific muscles for specific notes, that is, individual fingers can be assigned to individual notes on keys, frets or buttons. Players of instruments without this facility, such as trombone or xylophone, can use visual and kinaesthetic feedback to judge the spacing between notes, and therefore achieve a similar accurate subdivision of pitches. The vocalist has neither of these options. Singing uses the same muscle groups for all pitches (with changes occurring only for registers) and movement of intrinsic laryngeal muscles is not visible. Consequently the motor programs used by instrumentalists store specific melodic contours which the vocalists' simply cannot. It seems unlikely therefore that vocalists would favour motor generated ideas containing pitch directives

In the classroom, activities involving repetitious movement may increase the instrumentalist's chances of using motor generated ideas during improvisation in the future. Teachers cannot program the musician's brains but by selecting exercises such as playing patterns in all 12 keys they can create an environment where it is likely to happen. Sadly this investment of time is unlikely to produce the same motor programming results for vocalists.

Conclusion

Idea generation is an integral component of jazz improvising. An examination of Pressing's theory and Sudnow's practice reveals moments of intersection yielding clear concepts. However it is not the purpose of this article to declare strategy, audiated or motor generated idea categories exist based on an assumed authority of Pressing's model nor a presumed universality of Sudnow's experience. Rather, the author wishes to open a debate as to whether such succinct categorisation may be extended beyond this platform of two seminal writings and whether such a venture has benefits for the practice of effectively educating jazz improvisers as it first appears.

The arrival at three discrete sources of idea generation is by no means the limit of possibilities. Berliner's (1994, p. 394) description of improvisers experiencing overlapping domains of 'intellectual and "intuitive"; aesthetic and emotional; physical, sensual, and spiritual' suggests the surface has barely been scratched. Additionally, a reported mental state of transcendence experienced by skilled musicians during advanced improvisation (e.g., Berliner, 1994, p. 393; Kenny & Gellrich, 2002, p. 125) suggests it is possible a synthesis of the sources may occur in the later stages of development. There is an opportunity for future research, testing source categorisation against other texts and proposing new or amalgamated alternatives. Additionally, this paper invites further investigation into how instrumentalists and vocalists differ in source selection and how selection is affected by skill development.

For many educators, being simultaneously active in research and teaching can at times feel as if one is operating in two separate worlds. Moments of clarity when theory and practice intersect, such as the conversation at a jam session described at the beginning of this article, provide welcome reassurance to a convicted pragmatist. In conclusion, the

superimposition of the categories of idea generation onto the remainder of the conversation with the trumpeter at the jam session, would reveal this: When he improvised on trumpet he primarily selected strategy generated ideas; when he sang, he rejected strategy in favour of audiation generation. The reasons for this change and the influence of his current state of skill development on his choices are topics for future papers, but for now it is suffice to say, when it came to generating ideas in improvisation as a singer, our trumpeter selected different options than when he played.

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Figure 1. Simplified flow chart of the relationship between ideas and motor programming in improvisation as extrapolated from Pressing (1988)

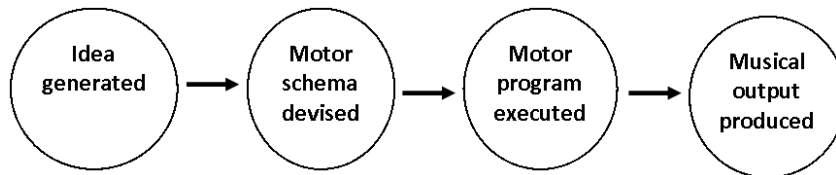


Figure 2. A flow chart of two alternate pathways for connecting audition generated ideas with motor activity during improvisation

