VRME

Learning in Time

By

Christopher F. Hasty
Harvard University

Abstract

The terms and concepts of music theory serve as tools for maintaining a practice through teaching and learning. They can also serve for exploration and discovery to follow changing practice or to suggest new practice. To function creatively, terms and concepts must themselves have the mobility to grow in depth and complexity and so lead beyond themselves. "Exploration," "discovery,' "creativity," "growth"... speak to the temporal, which is to say, to actual musical experience and practice.

A conceptualization and terminology that gets stuck in its abstractions, mistaking them for the concrete, can still function for teaching and learning, but at the high cost of alienation from musical creativity. This essay joins the work of Jeanne Bamberger in recommending a focus on time, or process, or development as a way of criticizing the reifications of theory and encouraging the development of a thinking and theorizing that, aware of its own openness and mobility, would serve the interest of creative music-making.

Events when once they are named lead an independent and double life... Meanings, having been deflected from the rapid and roaring stream of events into a calm and traversable canal, rejoin the main stream, and color, temper and compose its course. (Dewey 1927 as quoted in Bamberger 2011, p. 82)

Like everything else, music is temporal and always in motion. Only in thought is there a being outside time, but then, thought itself is nothing if not in motion. To say music is in time and motion means that music cannot be stopped to be measured by an outside observer. We might make stationary representations of music and claim that these hold the musical information we need to know about, but if there is observing or measuring to be done, even of representations, then this too is temporal. It is only in the fiction of an outside–outside the thing observed and outside ourselves as active observing subjects–that we imagine immunity from time and becoming. Indeed, we can and do claim to stop and measure music with objective or imaginary units of "time" (i.e., beats, seconds) and "space" (i.e., pitches, harmonies, sections). With proper training, we can name all sorts of immobilized parts and systems of parts, what we might call musical objects or structures. Without unit and part names, we would have almost nothing to talk about, or at least nothing we could hold onto. In Western cultures, these names are artifacts of pedagogical traditions aimed at the transmission of music through reading and writing. Music theory, as a technology of teaching reading and writing, supplies a great variety of names and systems of naming, from solfege syllables to the intricacies of harmony, counterpoint, and forms–and beyond, into the arcana of musical numerology. Although such naming is crucial for developing specialized musical skills, it can seem mystifying and exclusionary to the non-adept if taken as an identification of music's "natural kinds." Knowing all these categories of musical object and referring to musical notation, an adept can hold onto and point out countless things to which non-readers and non-initiated readers have no access.

Such objectification is a way of stopping or pretending to stop time. It is, consequently, a way of simplifying music, of radically eliminating the complications of an ongoing experience apart from which there is nothing (what is music apart from human experience). Stopping and simplifying in this way are indeed supremely human values. They are marks of human conceptuality, of "reason" and "language," but they make sense only in the context of ongoing experience and a complexity that they serve by complicating and moving forward. Stopping and simplifying are actions that take time and that take their changing and changed situations into account. To say that word and concept serve a situational complexity is to say that even the stoppage of the conceptual is a part of change and the emergence of novelty. Later discussion will suggest some ways of understanding stopping or holding as a durational, and thus properly temporal, category. These suggestions will be offered in an effort to resist the idea that the theoretical-conceptual might be protected from time and experience. Theory and practice will not be treated here as an essential opposition. Indeed, the aim will be to see a continuity that tends to be denied in any theoretical practice that would set itself apart from and above the variety and complexity of actual, here-and-now, experience.

In practice, most musicians selectively forget much of the conceptual apparatus of music theory and rarely if ever use many of the names they were taught. This forgetting is appropriate for those terms or concepts that once functioned as scaffolding, but no longer so function. Take the case of learning to read in order to play. Once you have learned to read at a certain level of proficiency, you need to let go of the devices that helped you get to that level. Letting go means

being open to new and more intricate, and perhaps increasingly less namable, connections.[1] If, for example, you continue counting or naming notes, you will never read fluently. Accomplished reading is thus different in kind from learning to read. Notation comes to function rather as a mnemonic devise composed of cues for the forming of dynamic, emerging events or "chunks" of music. If there are "parts" here, they are not discrete, but continuous, overlapping, interpenetrating. In the course of such learning, a generation of reading returns to its proper temporality and mobility after disciplinary exile in a world of discrete, namable parts. A similar analysis could be made of learning to compose, improvise, or sing from sight.

The success and efficiency of scaffolding devices is always open to criticism and to efforts toward improvement. What is taught and how it is taught are, of course, crucial ingredients for musical culture. Music theory can be empowering or alienating, socially inclusive or exclusive, relatively creative or sterile. Like any teaching, it will value and foster certain human potentials over others and thus, to some extent, shape the initiate. For this reason, music theory is always an ethical question. If, more than a set of devices, music theory is a thinking about music and communication, then it is an opportunity to think about ethical issues such as power, inclusivity, and creativity. In such an opening, music theory and pedagogy would be understood as overlapping or continuous disciplines. The question of time or passage is a way

---

[1] Horst Hendricks-Jansen, who offers a compelling view of scaffolding as a dynamic coupling of teacher and learner in a situated, species-typical environment (an environment that is composed of patterned activity), nonetheless acknowledges a reductive moment of specifically human learning. "With most tasks that involve unfamiliar forms of behavior [learning to read music or composing Renaissance modal counterpoint would certainly fall in this category] the only way to get the novice going is to give her a set of objective, task-related facts and some simple rules that describe the desired performance in relation to those facts….Both the rules and the facts are context free. This is necessary because *at this stage the novice has no experience to help her recognize context-dependent features*" (Hendricks-Jansen 1996, p. 311; italicization added for emphasis). With experience and learning, context seeps in, bringing with it a vast array of features that can be woven together in new ways. These ways are not arbitrary, they could be thought of as rules of a sort, regularities we could try to formulate as approximations, rules of thumb. Now that we have the freedom of context and the complication context brings, the old rules and facts, if we think of them at all, are not the same. If they seem the same, the thought will be as a recollection (e.g., "yes, that's the way I used to think of this, the way I learned").

forward. Jeanne Bamberger has explored this question deeply with its ethical dimension fully in mind. To take one of her examples, the Mots of the world, far from being regarded as musically or intellectually deficient for their resistance to the abstractions of unit-based measurement, can, if taken seriously, offer insights into both the complexities of time or process and into the "intellectual" limitations of conventional concepts of musical rhythm (Bamberger, 1991). In fact, Bamberger offers a much more serious challenge to music theory. It is not just a class of Mots that we might profitably take seriously, but individuals–this child in this classroom interacting with these other people. Such radical pluralism is really an outcome of valuing of the temporal, taking seriously the fact that things happen in the full complexity and particularity of a here and now. This is the pluralism of Peirce, James, Dewey, and Mead among many other process thinkers such as Bergson, Whitehead, Polanyi, Deleuze.[2] It is a valuing of time that promises a way out of the dogmatism of much music theory and a way to move beyond the rationalism of music psychologies modeled on the processing of discrete and essentially timeless bits of information.

Valuing the temporal can have many meanings or consequences. This discussion will focus on the mobility of theoretical and pedagogical terms or concepts–those things that can appear fixed, but that are, like everything else, always in motion leading from one thought, one action to another. Broadly understood, music theory is a language or symbol system, or rather a loose amalgam of various systems, for teaching and learning a musical tradition. It is also a vehicle for the growth or change of that tradition because the system, or systems, never works the same way twice, either with two people or with one person on two occasions. With learning, or even unlearning or forgetting, the meaning of the symbols changes necessarily. However,

---

[2] Bamberger's writing is full of references to process thought from Aristoxenus to Vgotsky, and indeed her writing contributes to this thought with special reference to music and learning.

granting this, there is still a temptation to see symbols and the concepts they symbolize (or function to bring again to mind) as fixed things referring to a general and persisting state of affairs, as matters of fact. In this view, the change in meaning of concepts with learning is in the direction of increasing adequacy to an ideal content. Bamberger warns of the inadequacy of such a view for an appreciation of musical, or any, complexity.

> …because of their power and efficacy in providing stable "things to think with" and shared means of communication, professionals and educators in all disciplines give privileged status to symbolic notations and theoretic categories associated with their domain. … symbol systems associated with all disciplines are necessarily partial and they are so in two senses: they are incomplete and they are also "partial-to" certain features while minimizing the importance of others. At the same time, by giving privileged status to these symbol systems, their referents, and their modes of description (sometimes thought to be explanations), users run the risk of coming to believe that the features and relations to which the symbols refer are the only "things," the only objects that exist in the domain. At the most extreme, this implicit ontological commitment has the potential of becoming a kind of ontological imperialism (Bamberger, 2006, pp. 70-71).

Imagining that symbols can contain or represent a stable knowledge leads not only to an underestimation of the richness of music, but also to an underestimation of the creativity and fluidity of symbols as they are actually used. Such underestimation can deprive symbols of their creative potential and cause them to languish in a dogmatism that would hold them immobile as fixed concepts–simple, self-same units of knowledge to be passed on unchanged. A measure of control can be gained in this way, but at the cost of alienating knowing from feeling, theory from practice. Belief in the identity and fixity of our terms can lead to the exclusion of countless meaningful features and relations and thus to a simplification that contrasts poignantly with the richness and complexity of actual musical experience. The contrast between the radical simplicity of abstraction and the endless complexity of the concrete has inclined many to keep

these two domains separate and to value an objective world of musical structure which is always the same over a subjective world characterized by ephemerality and limitless, unrepresentable, uncontrollable variety. However, this is an untenable opposition and valuation.

What we would claim to know as an objective world of musical structure is clearly constructed, both with and apart from the musical compositions imagined to have such structure. This is a world of concepts or systems of symbols that has emerged over time as people have observed, talked about, and experimented with music. These are human activities no less subjective than performing, hearing, playing, or composing music, and as human activities, they always run a different and new course–our structures do not stay the same. Moreover, to value an objective knowledge over subjective experience is to value the partial and abstract over the complexity of the whole. Terms (from *terminus*, boundary end), concepts (*con-cipere*), *Begriffe* seem to be about arrest and limitation, definition (*finis*, boundary, end), a separating of this from that. Yet, when they are working creatively–that is, not pretending to repeat the same–our terms or concepts are actually making connections, making meaning, and making all this anew. Symbols are indeed things to think with, but rather as metaphors, they are open to endless elaboration and development. Symbols change with the thinking they change, but only if they truly engage and change thought.

If the words that we use to lead ourselves and others into music are to function productively, then they must be on the move or at least promote mobility. If learning stops, meaning stops or at least stagnates. Earlier discussion touched on the idea of scaffolding as a tool for learning. The image of the scaffold, though useful in many ways, suggests timelessness as an end. Learning as work done with aid of the scaffold is certainly temporal or processive–work takes time. However, once the work is done, once learning is complete, the heuristic devise

becomes superfluous and can fall away. To say such symbols fall away is to say that they have

lost their mobility, their ability to keep up with growing, their ability to change knowing by

being productive in ever new ways. A scaffold can fall away because there is now a completed

edifice. To mistake the scaffolding for the edifice would be a category mistake. However, it is

also a mistake to think of an edifice of learning as an end or as a static ideal. If we can think of a

building or structure in experiential, temporal terms, it might be rather as a dwelling or an

environment to be lived in, a place to make a life that is always entering into new contexts or

situations. The environment affords and constrains these situations, and at the same time what is

made of the situation changes the situation so that something new can be made. If organism and

environment are so coupled, we need not posit clear separation of inner living and outer

environment, each would be shaped by the other.[3] If the language that is used in the making and

learning of music is viewed as a sort of environment, then it likewise need not be seen either as

something other than music or as something absolute, fixed, unchanging–an edifice to be

admired from the outside as a *fait accompli*. The language of music making and learning could

be viewed instead as something we live in and in living shape to our ends as a *fait accomplissant*.

If change is inescapable there are, nonetheless, ways to resist change in learning. One is

to minimize the creative potential of the concept so that it does not lead to new learning. It can

either be repeated thoughtlessly as a cliché or drop out as a bit of scaffolding that is no longer

useful. Another sort of resistance to change is belief in the adequacy of purely logical and

---

[3] Michael Polanyi speaks of an "indwelling" in which the dualism of an outside and an inside is exchanged for a process in which "body" and "world" are perspectival terms. "To use language in speech, reading, and writing, is to extend our bodily equipment…We may say that when we learn to use language, or a probe, or a tool, and thus make ourselves aware of these things as we are of our body, we interiorize these things and make ourselves dwell in them." (Polanyi, 1969, p. 148) The process Polanyi describes is that of creating meaning through a rhythmic movement of wholes and parts. "When we attend from a set of particulars to the whole which they form, we establish a logical relation between the particulars and the whole, similar to that which exists between our body and the things outside it. In view of this, we may be prepared to consider the act of comprehending a whole as an interiorization of its parts, which makes us dwell in the parts." (Polanyi, 1969, p. 148)

atemporal concepts such as fixed structure, self-same units, atemporal schemata, and discrete, externally related parts. When not treated as clichés, such concepts can be luxuriantly developed and so are hardly static; but in denying process, they deny the validity of actual experience in all its variety, and thus lead to the opposition of objective against subjective (or, as I suggested above, the simplifications of abstraction versus the real complexity of the situated event). Again, this opposition is unfortunate. Authority and mystification accrue to the objective and devaluation to the "merely" subjective. The authority of an ideal and, in fact, unattainable knowledge, as something outside change and thus necessarily outside us, can maintain its power only by devaluing us, in fact, making "us" in our particularity and freedom unthinkable.

Some concepts or devises are clearly dispensable and are readily dispensed with once they have served their purpose. For example, learning the five lines of the treble-clef staff with the help of the mnemonic "Every Good Boy Does Find" is a process that eventually leaves the devise behind as a distant memory–the way I used to think of this, the way I learned.[4] The devise is clearly arbitrary; its function could be served as well by any E-G-B-D-F sentence. Other devises, however, make naturalistic claims, which tend to obscure their partiality. For example, the circle of fifths, a symbol system encountered not long after clef reading, at least in textbooks,

---

[4] Although the devise may be forgotten, the learning continues in various ways. For example, memorizing the pitch names of clef lines (and spaces: "FACE") will later facilitate spelling chords in thirds when the topic of instruction turns to harmony.

serves first as a devise for memorizing key signatures.[5] This image too disappears once the keys are learned–to see three sharps simply means A major or F# minor, quite apart from the sequence C-G-D-A or a-e-b-f#. However, the circle of fifths, unlike E(very)-G(ood)-B(oy), can appear natural, not arbitrary, not a mere devise, but a truth about music–or at least European music of a certain period and style, if the distinction is made. In this case, the symbol of the circle can then continue to work as a musical metaphor. It can lead to speculation about the importance of harmonic motion by fifth or fourth, going counterclockwise toward the flat side. It can symbolize the closure of the tonal system as a closure signifying equal temperament with just twelve pitches per octave or twelve keys. Or it can symbolize more elaborately and imaginatively, inviting metaphors of musical "space" as an ideal and timeless realm of harmonic relations closed under laws of composition. The metaphorical work of the circle can be explored by historians of theory who seek to understand the symbol critically in its proper complexity as a changing imaginative construction. Or, less critically, the metaphorical work can be spun out in new geometries of tonal space (e.g., Cohn, 1998; Lerdahl, 2001; Tymoczko, 2011) and even placed inside the brain as a schema. The schema can then function as a sort of net for organizing

---

[5] The examples of "Every Good Boy" and the circle of fifths are fairly random. Other examples would be equally telling, each in its own way. Think of learning to hear or sing interval types. Here, we customarily begin with examples of particular tunes, for instance, perfect fourth from Schubert (descending) or Mendelssohn (ascending). In learning to sing from sight, we will come to draw on countless tunes and on sensitivities to scale degree qualities, registral connections, harmonic processes, and complexities of all sorts we have no name for, though we might eventually find names. None of these is detached, though in the beginning we may seek to detach one from another in the abstraction of "the perfect fourth." In fact, they all always work together, even in "Here comes the bride". The notion of a context-free perfect fourth is a (sometimes useful) fiction. Alternatively, think of learning to compose "modal counterpoint" in 16th-century vocal styles. Typically, as articulated by Hendricks-Jansen (1996), the student is given "a set of objective, task-related facts and some simple rules that describe the desired performance in relation to those facts. Both the rules and the facts are context free. This is necessary because at this stage the novice has no experience to help her recognize context-dependent features" (p. 311). If we reify the rules, imagining that they are not fictional, not made-up for the purpose of instruction, we can imagine that, as the student gains facility, the rules are *internalized* (brought in from the outside). This, however, would be a category mistake, like that of imagining that "the perfect fourth" is internalized as a master for the comprehension of outside variety. In fact, we go beyond (outside) the rule or the type to internalize an increasingly complex context. Incidentally, in teaching counterpoint, having students simultaneously sing and play two-voice and three-voice pieces from memory quickly obviates the need for rules. With this training, students come to view textbook rules as interesting and thought-provoking hypotheses rather like the theories-notations-paths Bamberger and her subjects explore together.

or capturing complex and mobile living musical experience in concepts–not concepts as mobile vehicles for learning, but rather as forms, now reduced to "mental representations" (Lerdahl, 2001; Krumhansl, 2004).

The reduction to a representation or, more generally, to a schema that produces representations, is a devise for putting time out of account, or rather for pretending to put time out of account–again, it takes time to pretend. Such imagery is as appealing for the rationalistic imagination as it is for the speculative-mystical. For the radically empirical and realistic imagination in which experience and time are real and irreducible, nothing experienced can be excluded.[6] In this view, representations, logical forms, and all the simplifications that pretend objectivity or control from outside must be fully acknowledged as a part of life that is distinctly human and endlessly productive. These temporary stoppages give us time for reflection and discovery. Scientific and technological achievement relies on atemporal, purely logical models, as does the development of musical notations and theories. Functioning creatively, concepts and symbols bring their own complexity with them and, in being put to use in ever changing situations, lead to ever new outcomes, combining with other symbols in new ways, leading to new questions, and perhaps eventually fading from use. It might be argued that complexity or "depth" in the concept acting together with complexity or "breadth" felt in the situation offers the possibility for freedom and creativity in action, though perhaps with some risk.

---

[6] "To be radical, an empiricism must neither admit into its constructions any element that is not directly experienced, nor exclude from them any element that is directly experienced. For such a philosophy, *the relations that connect experiences must themselves be experienced relations, and any kind of relation experienced must be accounted as 'real' as anything else in the system"* (James, 1996, p. 42; italicization from original). Along similar lines, in the advancement of what might be called a "speculative empiricism," Alfred North Whitehead writes: "Our datum is the actual world, including ourselves; and this actual world spreads itself for observation in the guise of the topic of our immediate experience. The elucidation of immediate experience is the sole justification for any thought; and the starting-point for thought is the analytic observation of components of this experience." (Whitehead, 1985, p. 4) I should point out that "actual" in this passage (and throughout the present essay) means active, presently going on (from Latin *agere* – to do, to set in motion).

Theories of process address the question of conceptualization in terms of a holding together, holding on to passage, or a holding up as a sort of stoppage or arrest. In the latter picture, arrest could be seen as an opening up of "time" or duration rather as a "space" for more context to develop or for the present situation to thicken or complicate. This is not a stopping of time, but the pausing of an action while other actions are proceeding.[7] One way of thinking about holding up or holding together is in terms of memory, for example, in terms of Bergson's connection of memory and durée (Bergson 2004, chapters 3 and 4). Here, the "present" duration formed in the moment of delay separating ongoing perception from action is already memory and as such is attached to the whole of the past. That past is, as Bergson (2004) says, variously "contracted" in a present that gains in freedom as more of the past, more context, is brought to bear in the making of present action.[8]

However we wish to explore the thought of representation and conceptualization as themselves fully temporal, our symbols and concepts will not be fixed, external things – they will change as we go. We can set the thought aside for a while and return to it, but our repetition will not be quite the same–just as our playing or hearing "the same" music will not be the same. Our past experience or rather what we can bring to bear of the past, in what degree of intensity

---

[7] In *A Process Model*, Eugene Gendlin (1997) develops the primitive concept of "object" from such stoppage. In this model process (physical, organic, mental) is always complex and changing; process is not made up of discrete, discontinuous bits. Objects, or ideas, or behaviors–what can be repeated or be "the same" again–are differentiated by being held or stopped as processes while the other processes continue. Without this difference of not now going on and later resuming, there would not be a distinction of this and other processes.

[8] "If there are actions that are really free…they can belong only to beings able to fix, at long intervals, that becoming to which their own becoming clings, able to solidify it into distinct moments… The greater or less tension of their duration, which expresses, at bottom, their greater or less intensity of life, thus determines both the degree of the concentrating power of their perception and the measure of their liberty." (Bergson, 2004, p. 279) See Deleuze (1988), especially chapters 3 and 4, for an account of Bergson's theory of memory and the rhythmic contraction/dilation (détente) of duration. Bergson's temporal and rhythmic approach to problems of memory and action, like that of many other process thinkers, allows us to think of musical experience and conceptualization together in temporal, durational terms. Deleuze (1994) offers an account of memory as primordially durational in his three "syntheses" of time. The idea of "time" as synthesis or holding together is explicitly linked to categorization by Jason W. Brown, as "a category incorporates or embraces a set of unique instances…mind first appears in a duration that arises out of pure succession, a duration that encloses a collection of *virtual* instants in the same way that a category binds together an assortment of virtual (i.e., abstract) objects" (Brown, 2002, p. 38-39).

and to what extent, will determine our present, ongoing involvement. To make music takes effort and emotion, understood as an activity of valuing and selecting how to invest our energies. There are no guarantees for how this will work on any occasion. The freedom and creativity we bring into play are not simply exercised on a pre-existing object or structure that could stay the same and thus give us an opportunity to control the outcome. If we wish to speak of object and structure, we could say that these are created in the moment with their stamp of novelty and particularity. Certainly, there is repetition–this identifi*able* piece with these identifi*able* characteristics (how many could we name)–but not the repetition of an object or structure as an identity that could be transmitted magically from outside to inside (*where* precisely is this outside, *where* is the past). Nor is what is transmitted a body of knowledge as an object or edifice, say, as a collection of doctrine. We might think of it rather as a living body of practices and habits that adapt to present circumstances, or we might think of the past of the body with its genealogy and genetics as a vast field of potentiality realized in present novel action, which in turn changes that field for future action.

The creative functioning of concepts and symbols for engaging music takes energy and experimentation. A lack of creativity leads to stasis and a detachment from intense musical engagement and learning. A concept that loses creativity can drop away rather as scaffolding, or it can become absorbed into more complex, developed concepts. If however, it purchases survival by separating itself off from participating in a "broader" world of musical learning, the result can be destructive. Such separation can be achieved by a claim of autonomy, which would here be understood precisely as a denial of the temporal. If in "time" (or durée or process) things are always connected, conditioned and conditioning, then no event sits unchanged and unchanging. To imagine the autonomy of the musical work, or of structure, or form, or

composer's intention, we should have to imagine something outside time and becoming, but again, *where*.

Since experience is nothing if not temporal, a detachment of concept from experience is alienating for any experiencer, regardless of formal training. Listeners, especially when presented with high art that claims structural autonomy, may feel blocked from full participation by lack of knowledge (e.g., "I love this music, but I don't know anything about it"). Players can feel anxiety or anger in the thought that there is an understanding of music that they cannot participate in or connect with their own practice. Alternatively, it is possible to use an alienated "knowledge"–of facts, of systems, of imagined access to composer's intention–to protect oneself from the complexities and risks of music making. From this latter perspective, actual experience and the actual mobility of the conceptual can seem a threat to certainty and stability. If concepts are viewed as absolute, changeless matters of fact the complexity and endless variety of experience must be devalued as the *merely* subjective. The ontological imperialism Bamberger (2006) speaks of is also an ontological deception, an illicit substitution of the partiality of abstraction for the whole of the concrete or an inversion of the proper order in which abstraction or simplification derives from and is dependent upon the complexity of the actual, an order, moreover, in which abstraction, if functioning productively, would be able to adjust to and learn from the concrete/empirical.

It may be judged that this inversion is a discipline necessary for culture, tradition, and the maintenance of humane social order, and if the relativity, subjectivity, and infinite complexity of the actual were to gain ascendency, the result would be chaos. This is an ethical judgment that has generally prevailed in authoritarian society, though not without contest. Art is an activity that involves discipline and constraints–the learning or overlearning of skills or habits, the

development of special (partial) sensitivities. Art is also an activity that aims for freshness and novel intensities of feeling. How these demands for repetition and novelty are negotiated in practice and how they are explicitly valued or theorized changes as cultures change. The musical theory that may have worked relatively transparently in the past may seem opaque and abstract in its present incarnation. It is not only musical culture that has changed. All sorts of social categories or concepts that once operated more or less automatically in their regulation of behavior have now loosened, giving way to complex, situational demands for new behaviors, new meanings. The extraordinary diversity and pluralism of present American culture, musical and otherwise, asks for a theorizing that would, perhaps for the first time, openly acknowledge complexity and change. Bamberger's work over the past decades has done precisely this, aligning music theory and pedagogy with other fields that have risen to this challenge. As new research in the sciences and humanities continues to explore issues of complexity and process, more opportunities will arise for music to participate. For those drawn to such an opening Bamberger will continue to demonstrate the musical, intellectual, and ethical rewards of participation.

References

Bamberger, J. (1991). *The mind behind the musical ear: How children develop musical intelligence*. Cambridge, MA: Harvard University Press.

Bamberger, J. (2006). What develops in musical development? A view of development as learning. In G. E. MacPherson (Ed.), *The Child as Musician: Musical Development from Conception to Adolescence* (pp. 69-92). Oxford, U.K.: Oxford University Press.

Bamberger, J. (2011). The collaborative invention of meaning: A short history of evolving ideas. *Psychology of Music, 39*(1): 82-101.

Bergson, H. (2004). *Matter and memory*. N. M. Paul & W. S. Palmer (Trans.). New York, NY: Dover Publications, Inc.

Brown, J. W. (2002). *The self-embodying mind: Process, brain dynamics and the conscious present*. Barrytown, NY: Station Hill Press.

Cohn, R. (1998). An introduction to neo-Riemannian theory: A survey and a historical perspective. *Journal of Music Theory, 42*(2): 167-180.

Deleuze, G. (1988). *Bergsonism*. H. Tomlinson & B. Habberjam (Trans.). New York, NY: Zone Books.

Deleuze, G. (1994). *Difference and repetition.* P. Patton (Trans). New York, NY: Columbia University Press.

Gendlin, E. (1997). *A process model*. New York, NY: The Focusing Institute. Retrieved from http://www.focusing.org

Hendricks-Jansen, H. (1996). *Catching ourselves in the act–Situated activity, interactive emergence, evolution, and human thought*. Cambridge, MA: MIT Press.

James, W. (1996). *Essays in radical empiricism*. Lincoln, NE: University of Nebraska Press.

Krumhansl, C. (2004). The cognition of tonality–As we know it today. *Journal of New Music Research,* 33: 253-268.

Lerdahl, F. (2001). *Tonal pitch space*. New York, NY: Oxford University Press.

Polanyi, M. (1969). *Knowing and being.* M. Grene (Ed.). Chicago, IL: University of Chicago Press.

Tymoczko, D. (2011). *A geometry of music: Harmony and counterpoint in the extended common practice*. New York, NY: Oxford University Press.

Whitehead, A. N. (1985). *Process and reality*. New York, NY: The Free Press.