On Bergson's Concept of the Virtual

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I. Introduction

For Henri Bergson, the concept of the virtual represents the harmony of mind and matter, the affirmation of time over space, and the living, creative power of difference.[1] It is a concept that proved productive for Gilles Deleuze, who wrote a book and several articles on Bergson, and who retained and expanded upon the concept in his own work. Recently, Bergson's virtual has enjoyed a renewed interest among scholars in the humanities, but among music scholars a serious engagement with Bergson is less common.[2] The virtual is more likely to refer to simulated ("artificial") musical environments – those created by electronic or computer technologies – than to anything related to Bergson. Yet the virtual, as a conception of time and movement, of reciprocal passage between perception and memory, would seem to be well suited to music:

> It is…the performance of the movements which follow in the movements which precede, a performance whereby the part virtually contains the whole, as when each note of a tune learned by heart seems to lean over the next to watch its execution.[3]

Bergson suggests that the virtual applies to music. But how is it applicable? And more importantly, how is it useful? In order to consider these questions, it will first be necessary to summarize the concept itself. Once this is accomplished I will argue not only that the virtual designates a real aspect of musical experience, but that the existence of this aspect is already

[1] One of Bergson's most famous statements is: "Questions relating to subject and object, to their distinction and their union, should be put in terms of time rather than of space" (Henri Bergson, *Matter and Memory*, trans. N. M. Paul and W. S. Palmer [New York: Zone Books, 2002], 71).
[2] An example is Keith Ansell Pearson's *Philosophy and the Adventure of the Virtual* (New York: Routledge, 2001).
[3] Bergson, *Matter and Memory*, 94.

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established, in part, in the form of related concepts and under other terms (although I will also mention specific cases where music scholars delve into Bergson and the virtual). I will then speculate as to how the virtual, as Bergson conceived it, could be applied to music as a theoretic technology and sketch out the sort of insight this might offer. For this discussion I will rely significantly on Gilles Deleuze's interpretation of the virtual and concepts developed in his philosophies of time and difference.

II. Bergson's Concept of the Virtual

For Bergson, the virtual is synonymous with intuition.[4] Although it presents difficulties under certain philosophical or scientific lights, Bergson attempts to penetrate a sphere that is seemingly inaccessible to conventional intellectual thought. But philosophers and scientists alike depend heavily upon intuition in their work (we all do), and it is not uncommon for a philosopher to appeal to intuition as the final authority on certain questions. The point is if Bergson reveals anything about how the intuition works, it will be a different kind of knowledge than that of conventional science or philosophy, more akin to what mystical traditions such as Buddhism call "direct" knowledge.[5] That being said, Bergson considers his theory of intuition to be philosophically rigorous, and Deleuze dubs it "one of the most fully developed methods in philosophy."[6]

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[4] Bergson remarks: "In concrete perception, memory intervenes, and the subjectivity of sensible qualities is due precisely to the fact that our consciousness, which begins by being only memory, prolongs a plurality of moments into each other, contracting them into a single intuition" (Bergson, *Matter and Memory*, 219).

[5] Among the many Buddhist, Sufi, Hindu or other texts I could cite here, Maitreya (Buddhism) describes "the path of vision, on which the suchness attained is in a fashion direct, whatever experienced" (Maitreya, *Distinguishing Phenomena and Pure Being*, trans. Jim Scott [Ithaca, NY: Snow Lion Publications, 2004], 29). Deleuze himself acknowledges Bergson's congruence with mysticism: "The great souls – to a greater extent than philosophers – are those of artists and mystics" (Gilles Deleuze, *Bergsonism*, trans. Hugh Tomlinson and Barbara Habberjam [New York: Zone Books, 1991], 112).

[6] Deleuze, *Bergsonism*, 13.

In *Matter and Memory*, Bergson sets out to overcome the traditional dualism between body (matter) and mind (spirit). His solution is not to abolish the distinction, but to reaffirm the reality of body and mind in such a way that the two sides can be brought into meaningful contact. Bergson criticizes two forms of philosophical dualism: realism and idealism. Realism is described as a form of empiricism in which perception and reality are treated as equivalent. It "reduces matter to our perception of it."[7] For Bergson, there is more in perception than the pure stimulus received from the objective world, and more to the objective world than is given by perception. Idealism, on the other hand, radically distinguishes perception from the objective world. It holds that "matter produces in us perceptions, but is in itself of another nature than perception."[8] Access to objective reality, then, is afforded through reason and deduction. It is thereby equated to the concepts of it developed by the mind.

Though realism and idealism appear opposed to one another, Bergson argues that they are actually the same structure with a double appearance. Realists link concepts to a presumed transparency of perception, while idealists posit an external world through a presumed transparency of concepts. Thus, maintains Bergson, either position is condemned to revolve around the same circle of thought, moving back and forth with propositions on one side validated on the other. He contends that the source of difficulty with these forms of dualism is in their similar presumption regarding the nature of perception. For realism as well as idealism, the role of perception is presumed to service the speculative interests of mind – its essential function is the relay of data to the intellect. Bergson, on the other hand, regards perception as directed toward action. And in this role its intersection with mind takes on a decidedly different character.

[7] Bergson, *Matter and Memory*, 9.
[8] Bergson, *Matter and Memory*, 9.

Understanding perception as already conditioned, to a degree, by a tendency toward action means that matter, or the content of perception, breaks from its hard alliance with objective reality. And yet it is not severed to the point where perception is considered of an altogether other order. "Matter is an aggregate of 'images.' And by image we mean a certain existence which is more than that which the idealist calls a representation, but less than that which the realist calls a thing – an existence placed halfway between the thing and the representation."[9] There is, then, a distinction between matter and our perception of it, but the difference is one of inflection: presumably matter in itself is indifferent, but it is perceived in such a way as to indicate potential movement. "I call matter the aggregate of images, and perception of matter these same images referred to the eventual action of one particular image, my body… The objects which surround my body reflect its possible action on them."[10]

With the content of perception no longer conceived as an indifferent stream of data but a content beckoning to the action of the body, its relation to mind changes. Rather than a faculty responsible for the mere conveyance of information, perception is conditioned in order to initiate a return – a return that is responsive to the inflection of potential movement with which it is presented, rather than issued from a detached, speculative mind. Thus, in reconstituting the role of perception, Bergson transforms the interest and activity of the mind. It is no longer absolutely divorced from perception, freely entertaining its own concerns, but is situated in a certain posture of tension – where it is, in some sense, beholden to perception, and in any case, deeply devoted to its content. The response, given by the mind, is directed into perception. It is called upon not simply to interpret the content of perception, but to assist in forming it in the first place. In other words, Bergson regards true perception as a mixed state, constantly held in a tension between

[9] Bergson, *Matter and Memory*, 9.
[10] Bergson, *Matter and Memory*, 9.

perception on one hand and mind on the other, neither of which can claim the independence of its content.

The responsibility Bergson attributes to the mind insofar as it is tasked with assisting in the form of perception is prior to any conscious activity or choice. It is an automated, motor process, a special and primary function of memory: "There is no perception which is not full of memories. With the immediate and present data of our senses, we mingle a thousand details of our past experience."[11] Memory consists in a vast reservoir of images, some of which, at any given moment, come to penetrate perception. They are unconscious and latent, but may be brought forward to be "actualized" with what is perceived. Bergson conceives of memory not as a storehouse of comparative data, but as a useful and active partner with perception, supplementing what is perceived with qualities that animate the potential utility and promise for prospective action. For Bergson, "to foresee consists of projecting into the future what has been perceived in the past, or of imagining for a later time a new grouping, in a new order, of elements already perceived."[12] Memory "marks out upon matter the design of its eventual actions even before they are actual."[13] It "lights up the zone of potentialities that surrounds the act. It fills in the interval between what is done and what might be done."[14]

The interpenetration of memory with perception is a process in which memories are transformed from their nascent state into an active state intermingled with the action in which perception is engaged. In this state, a memory is said to be actualized: "A…memory only

[11] Bergson, *Matter and Memory*, 33.
[12] Henri Bergson, *Creative Evolution*, trans. Arthur Mitchell (New York: Barnes & Noble Books, 2005), 5.
[13] Bergson, *Creative Evolution*, 10.
[14] Bergson, *Creative Evolution*, 147. Bergson paints this picture: "A beneficent fluid bathes us, whence we draw the very force to labor and to live. From this ocean of life, in which we are immersed, we are continually drawing on something, and we feel that our being…has been formed therein by a kind of local concentration" (Bergson, *Creative Evolution*, 158).

becomes actual by borrowing the body of some perception into which it slips."[15] By "body" Bergson means not only a "shape" in a spatial sense but, above all, in a temporal sense: as a line of movement which the actualized memory follows and enhances. This temporal depth is, more than anything else, the vital service memory provides to perception.

That perception interacts with memory is by no means a novel theory. But Bergson goes to great lengths to assert the unique form and function of his approach, and to sharply distinguish it from others. Part of what sets it apart is the radical distinction that is made between the nature of a perception and that of the memories that melt into it. Whereas more conventional theories might regard memory as a dim copy of a more intense perception, Bergson would have memory supply an essential ingredient to perception which perception itself lacks. And this amounts to the prolongation of momentary perception into a temporal field where objects and actions appear thrown into relief by time.[16]

Another way Bergson distinguishes his concept is by the rules of engagement governing the selection of images cast into perception. It is not enough that there simply be a resemblance between a perception and a memory. There is a sense in which perception benefits from the movement afforded by the selection of this image over others, so that the selected image is prolonged as an enduring quality of the perception. "If it so happens that former images can…be prolonged in these movements, they take advantage of the opportunity to slip into the actual perception and get themselves adopted by it."[17]

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[15] Bergson, *Matter and Memory*, 67.

[16] The sort of memory Bergson ascribes to the process of perception is distinct from the commonplace notion of a memory, or recollection, where one is brought back in imagination to another time. Although real, this memory moves in a contrary direction from the sort that is seamlessly engaged with perception and movement. In enacting "representational" memories, "we must be able to withdraw ourselves from the action of the moment" (Bergson, *Matter and Memory*, 82-83).

[17] Bergson, *Matter and Memory*, 96.

It is not particularly clear, on the face of it, what it means to prolong a memory in a movement; nor is the criteria for selecting one image over others especially apparent. The difficulties diminish, however, if the situation in which perception occurs is specified. They diminish further if perceptions are given in an extended temporal sequence, such that the sequence not only calls forth memory-images but creates them along the way for further use. It is important, however, to take seriously the emphasis Bergson places on movement, and the particular responsibility of the memory image to facilitate it. And facilitating means, above all, lighting up the temporal environment through which movement will accomplish its end.[18] A *temporal* image is not a static picture but the nascent lines of a movement ready to be activated. Furthermore, the process of selecting and deploying memories is *always* occurring. Activated memories continuously form with and in advance of movement, and are always blended and multiple. In other words, it is a profoundly immanent engagement, very different from the sorts of referential categories and identities typical of other psychological theories of Bergson's era.

In his extended critique of associationism, Bergson analyzes the problems of psychologies that depict the relationship of perception and memory as a matching game between objects. "The capital error of associationism is that it substitutes for [the] continuity of becoming…a discontinuous multiplicity of elements, inert and juxtaposed.… The principle of associationism requires that each psychical state should be a kind of atom, a simple element."[19] According to Bergson, there are two profound errors in such systems. One is the error I described earlier, in which the association is made between items that are thought to be of a similar kind. In equating memory with perception, there is nothing an associated memory can give to a perception except a sort of confirmation of its identity or the coordinates of the memory's

[18] By "lighting up the temporal environment" I mean putting into play a virtual co-presence of other moments within this actual moment.
[19] Bergson, *Matter and Memory*, 134.

location within a prefigured representation. This deprives memory of its most useful office, which is to create the temporal continuity necessary for movement. The other error is that associationism devolves into a seemingly arbitrary interest in intellectualized relations – forgetting the interests of movement and action:

> What we really need to discover is how a choice is effected among an infinite number of recollections which all resemble in some way the present perception, and why only one of them – this rather than that – emerges into the light of consciousness. But this is just what associationism cannot tell us, because it has made ideas and images into independent entities floating, like the atoms of Epicurus, in an inward space, drawing near to each other when chance brings them within the sphere of mutual attraction.[20]

Since associationism routes connections directly between one thing and another, the interests of consciousness engaged in movement are disregarded in favor of the supposed effect manifested by the connection. There is a mysterious power in the relay, both in the sense that the independent entities have somehow mobilized autonomously toward one another, as well as in the sense that the effect of their combination is an unknown remainder: "Associationism is reduced to bringing in, between these objects, mysterious attractions, of which it is not even possible to say beforehand…by what effects they will manifest themselves."[21] As he maintained against realism and idealism, the errors Bergson finds in such systems derive from the common presumption that the interest of perception is speculation rather than action: "We find that its error is that it overtly *intellectualizes* ideas: it attributes to them a purely speculative role, believes that they exist for themselves and not for us."[22]

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[20] Bergson, *Matter and Memory*, 164.

[21] Bergson, *Matter and Memory*, 164-165. Many of music theory's established analytic methods are vulnerable to Bergson's critique. The "manifested effect" of matching identities often goes by the name of "coherence." But the actual, that is, musical purpose to which the general property of coherence supposedly contributes over and above anything else is often (tacitly) regarded as self-evident. For example, Joseph Straus says: "When we listen to or analyze music, we search for coherence. In a great deal of post-tonal music, that coherence is assured through the use of pitch-class sets" (Joseph Straus, *Introduction to Post-Tonal Theory*, 3rd ed. [Englewood Cliffs, NJ**:** Pearson Prentice-Hall, 2005], 33).

[22] Bergson, *Matter and Memory*, 164.

The immanent intersection between perception and memory designates the virtual. But there is more to this intersection than the provocation of memories projected into perception. Bergson closes the gap, as it were, all the way, so that perception is returned with a virtual memory-image of itself instantaneously and continuously. At its most immediate point the virtual is like a mirror that distorts perceived objects in a halo of temporality. This is what Deleuze means by "a more profound, internal repetition within the singular."[23] The origin of the virtual is thus fully immanent and its development is directed toward the perception it reflects. The selection of more remote memories must be guided by this taught, continuous doubling.

> For, while external perception provokes on our part movements which retrace its main lines, our memory directs upon the perception received the memory-images which resemble it and which are already sketched out by the movements themselves. Memory thus creates anew the present perception, or rather it doubles this perception by reflecting upon it either its own image or some other memory-image of the same kind.[24]

The virtual memory image that moulds over the perception, infusing it with qualities and temporal depth, is what Deleuze calls a "virtual object." The effects of virtual objects penetrating the real contents we perceive would be difficult to distinguish in themselves – that is, their very operation is to animate perception so that the qualities bestowed by the virtual appear as properties belonging to the perceived objects proper (such as the distillation of their qualities and their consistency in time).

At this point, the virtual seems less and less like a system where perception depends upon the previously established formation of memory and more like an ongoing, reciprocally conditioned process. The content of memory is continuously flooded by perception in an

[23] Gilles Deleuze, *Difference & Repetition*, trans. Paul Patton (New York: Columbia University Press, 1994), 1.
[24] Bergson, *Matter and Memory*, 101. As an argument in support of the perceptive doubling of images, Bergson says that "every *attentive* perception truly involves a *reflection*…that is to say the projection, outside ourselves, of an actively created image, identical with, or similar to, the object on which it comes to mold itself. If, after having gazed at an object, we turn our eyes abruptly away, we obtain an "afterimage" of it: must we not suppose that this image existed already while we were looking?" (102-103).

exchange that constitutes the greatest density of activity. More remote memories must necessarily be organized so as to flow seamlessly into the prevailing movements closer in to perception. And if memory continuously doubles and projects this refracted image toward perception, there is no other time for new memories to be formed. Thus, certain sequences of perceptions may be designed to produce the very virtual memories that are required to properly perceive later events. In any case, Bergson's depiction of memory involved with perception amounts to a very different order than that which envisions it to be a slowly evolving, monolithic and stable catalog at the disposal of a consciousness interested primarily in the recognition of identities and affirmation of preestablished meanings.

> It has retained from the past only the intelligently coordinated movements which represent the accumulated efforts of the past; and it recovers those past efforts, not in the memory images which recall them, but in the definite order and systematic character with which the actual movements take place…it no longer represents our past to us, it acts it; and if it still deserves the name memory, it is not because it conserves bygone images, but because it prolongs their useful effect into the present moment.[25]

III. Bergson, Virtuality, and Music Scholarship

In recent decades some music scholars have shown an interest in Bergson and the concept of the virtual (in relation to Bergson and Deleuze). Walter Frisch refers to Bergson's understanding of memory in his discussion of aspects of recurrence in Schubert's G-Major Quartet, D. 887.[26] Unfortunately, Frisch's reading has Bergson affirming a mundane view of memory as returning to a bygone time (or recollection). This emphasis distorts Bergson, whose project, as a rule, downgrades the significance of independent recollections in our engagement of the world. That he has misread Bergson is evidenced by Frisch's proposal of a remembering

[25] Bergson, *Matter and Memory*, 82.
[26] Walter Frisch, "'You Must Remember This': Memory and Structure in Schubert's String Quartet in G Major, D. 887," *The Musical Quarterly* 84, no. 2 (2000): 582-603.

subject: a "hypothetical competent listener of Schubert's day."[27] This sort of objective reconstruction of someone else's consciousness (living or dead) could not be more anathematic to Bergson, who advocates a perspective of experience that is lived and immanent: "The duration *wherein we see ourselves acting*, and in which it is useful that we should see ourselves, is a duration whose elements are dissociated and juxtaposed. The duration *wherein we act* is a duration wherein our states melt into each other. It is within this that we should try to replace ourselves by thought."[28] Though there may be some *utility* for such abstractions, a hypothetical listener is *doubly* abstracted from the immediate plane of experience (action) which is the locus of Bergson's approach to the real.

A more thorough treatment of Bergson is undertaken in Raymond Monelle's essay "The Temporal Image."[29] Like Frisch, Monelle's project is somewhat inconsistent with Bergson's, limiting the extent to which he is able to incorporate Bergson's ideas. Although Monelle is in full sympathy with Bergson with respect to his critique of spatialized, quantitative conceptions of time, the alternative Monelle offers is again not one to which Bergson himself would subscribe. Monelle pits what he calls "cultural time" against "natural time" (the abstract and homogenous "clock time" in which "it is impossible to *live*"[30]). Ironically, Monelle notes that what Westerners generally think of as natural time is really a social construction. It is *natural* from a Western point of view, just as the various cultural times are also thought of as natural from within a given culture. For this reason Monelle's dichotomy is not sturdy, and it does not canvass every possibility. Insofar as time is conceived external to experience (be it natural or cultural), it remains abstract and impersonal. For Bergson there is no other time than that which is

[27] Frisch, "You Must Remember This," 590.
[28] Bergson, *Matter and Memory*, 186 (emphasis original).
[29] Raymond Monelle, *The Sense of Music: Semiotic Essays* (Princeton, NJ: Princeton University Press, 2000).
[30] Monelle, *The Sense of Music*, 82.

experienced, and to understand this experience in a way mediated by concepts of time external to experience prejudices a uniform interpretation of time over the personal, qualitative multiplicity of experienced time.[31] On the other hand, Bergson would not argue with Monelle when he says "musical continuity always 'melts' into an intuitive unity, or it is not perceived as music."[32] It is no accident that Monelle has more success reaching a Bergsonian proposition when musical experience is situated as an essential encounter, a kind of becoming, rather than a species of cultural recognition.[33]

In a Bergsonian spirit, J. Wilson-Bokowiec and M. A. Bokowiec state that "projective sensual encounters with the world could be described as 'virtual'… 'To hear' is not simply a matter of aural perception, but involves a similar form of pre-reflective proprioception that includes projective movement (kinaesthetics) to intuit depth and feeling."[34] Though Bergson is not named, the underlying view expressed certainly puts its finger on a Bergsonian idea. A different angle is taken by William Echard, who treats Deleuze's concept of the virtual (without reference to Bergson) in a discussion of the relationship between musicians and their instruments.[35] His sense of the virtual in music concentrates on objects much more general than that which would involve an ongoing engagement with the virtual in musical perception. He says: "Multiple performances of a single work differ yet point to a virtual object which remains

[31] There are other issues worth mentioning. For example, Monelle's dichotomies between the ("merely") syntactical and the semantic, the distinction between how musical time is structured versus what it may "mean," or the distinction between signifier and signified, are perilous propositions in a Bergsonian (and certainly in a Deleuzian) world. Nevertheless, Monelle launches an admirable critique of Zuckerkandl and Clifton with respect to their positions on the wholeness or simultaneity of musical works.
[32] Monelle, *The Sense of Music*, 87.
[33] I am borrowing from Deleuze who says we should think of works of art as "objects of an essential encounter, rather than of recognition" (*Difference and Repetition*, 285).
[34] Julie Wilson-Bokowiec and Mark Alexander Bokowiec, "Kinaesonics: The Intertwining Relationship of Body and Sound," *Contemporary Music Review* 25, nos. 1-2 (2006): 55.
[35] William Echard, "Sensible Virtual Selves: Bodies, Instruments and the Becoming-Concrete of Music," *Contemporary Music Review* 25, nos. 1-2 (2006): 7-16.

perpetually suggested, yet never manifested."[36] While there is something to Echard's point, my reading of Bergson and Deleuze leads to the conclusion that virtual objects are intensively deployed in musical textures, by far the most remote of which might be the virtual "identity" of the work itself.

Though few music scholars have referred to the virtual (in a Bergsonian sense), there are musical concepts which have similar characteristics or which entail the prospective effects of music. The words *expectation* and *anticipation* are frequently used by scholars. Although these terms presumably characterize listening in general, they often seem to be called upon to designate special circumstances in which an expected or anticipated event is *thwarted* (for example, the deceptive progression). By and large the way expectation or anticipation is understood presupposes the prior assimilation of a general categorical scheme of normative musical behavior. Given such a system, there are essentially two things that can happen following an expectation: it is either confirmed or denied. The general view is that successful musical expressions blend the two modes, albeit with a preponderance of the former over the latter.

Arguably, there is a limit to the explanatory power of general normative models when it comes right down to the particular moment-to-moment flow of a musical situation. Much rides on creating expectations: fulfilling them, on the one hand, without losing energy or becoming mundane; or denying them, on the other, without destroying the continuity or musicality of the expression. Although the means we have of understanding certain qualitative effects generated by the confirmation or denial of expectations is almost always with reference to a general scheme of normative behavior, there is something fundamentally lacking in the explanation that is presupposed in the success of the effect in a particular case. But where else except in the

[36] Echard, "Sensible Virtural Selves," 10.

stylistic generality of a work's common practice can any sense of expectation be raised to be either confirmed or denied?

One possible answer is that the dichotomous scheme of confirmation or denial, as the basic function of the prospective in music, might be misconstrued. Perhaps listening is far more dependent upon and involved with prospective musical events than this simple dichotomy can account for. And if this is so, general schemes such as Narmour's "Implication-Realization" theory, with a bottom up (universals) on the one hand and a top down (stylistic norms) on the other develop around a problem whose solution overemphasizes the dichotomy while still leaving something wanting.[37] Approaches such as Narmour's have grown less sturdy in light of recent research trending in the direction of a suppler, more responsive memory.[38] Marc Leman argues that studies claiming the existence of tonal hierarchies in long-term memory "provide no evidence for the claim that listeners familiar with Western music have abstracted tonal hierarchies in a long-term memory."[39] While traditional psychological data-research is a backdoor means of approaching Bergson's concept of the virtual, there is no reason the virtual, if it is a valid conception of memory and perception, should not be supported by this research. However, there is a point at which only introspection and creative effort will yield a sufficiently Bergsonian perspective.

Mari Riess Jones has produced general models of human attentiveness to external temporal events and the corresponding internal movements that arise: "We continually cast ourselves forward by rhythmically anticipating future events that may occur within smaller and

[37] See Eugene Narmour, *The Analysis and Cognition of Melodic Complexity: The Implication-Realization Model* (Chicago: University of Chicago Press, 1992).
[38] See recent work by Markus T. Pearce and Geraint A. Wiggins, "Expectation in Melody: The Influence of Context and Learning," *Music Perception* 23, no. 5 (2006): 377-405.
[39] Marc Leman, "The Role of Short-Term Memory in Probe-Tone Ratings," *Music Perception* 17, no. 4 (2000): 507-8.

larger time intervals. These paths form the patterns of mental space and time and so can establish for us that sense of continuity and connection that accompanies comprehension."[40] Jones is relied upon in Justin London's theory of meter, which moves away from "time discrete" conceptions of temporality to a "time continuous" model.[41] London focuses on what is contributed by the "entrained listener" to metric experience: "The way we attend to the present is strongly affected by our immediate past; once we have established a pattern of temporal attending we tend to maintain it in the face of surprises, noncongruent events, or even contradictory invariants. Music often depends on our making an effort to project and maintain an established meter in passages that involve things like syncopation and hemiola."[42] London's theory deals with the prospective in musical experience in terms of cyclic patterns that could be extrapolated at a particular moment to reveal extensive virtual experience of coming time. That being said, his thinking goes in a different direction from a Bergsonian conception of time. There is a sense in which temporal experience breaks sharply from perception (becomes self-contained) wherever meter is established, which is not a notion to which Bergson would subscribe. Whereas Bergson emphasizes our experience of duration as essentially fluid and multiple, London emphasizes the fixity, alignment, and ordering of temporal spans. Bergson's virtual would have "entrainment" mean a continuity between perceived events and temporal projection so that there is an interpenetration of the two rather than the discreet operation of an internal cycle on the one hand opposed with a sound experience on the other. Bergsonism allows for the cyclic in our experience of time ("Life appears in its entirety as an immense wave which, starting from a centre, spreads outwards, and which on almost the whole of its circumference is stopped and

[40] Mari Riess Jones, "Only Time Can Tell: On the Topology of Mental Time and Space," *Critical Inquiry* 7, no. 3 (1981): 571.
[41] Justin London, *Hearing in Time: Psychological Aspects of Musical Meter* (Oxford: Oxford University Press, 2004). London describes meter as a cyclical, "resonating system" (21).
[42] London, *Hearing in Time*, 25.

converted into oscillation").[43] But this sense of the cyclic is living, open, multiple, and process oriented, rather than inert, closed, and "gestalt" oriented.

There are a few musical theories that approach what would properly fall under Bergson's designation of the virtual. It is quite close to the theory espoused by Edmund Gurney's *The Power of Sound* in the 19th century. Jerrold Levinson terms Gurney's basic approach "concatenateaonism" which means that "music of any extent consists of a series of successive events, which cannot be apprehended simultaneously in a single perceptual act."[44] Unlike the architectonic model implicit to most theories, concatenateaonism places overriding emphasis on "involvement in the musical progression from point to point, the local movement from note to note and phrase to phrase." Of particular interest to Gurney is the phenomenon of melody, the essence of which, according to Levinson, "lies in the specific notes that go to make it up, and not in anything more general that may be abstracted from them."[45] In listening to a melody, "…one seems to evolve it from within oneself…with its characteristic tensions and overall flavor, by the very act of listening." Levinson notes that Gurney attributes this process to the human faculty of "linking a long series of swiftly vanishing impressions into a unity." By virtue of this special faculty, the "whole process is in some real manner present to us at each of the successive instants at which only a minute part of (the melody) is actually engaging our ears."[46]

Levinson develops a series of propositions, among these that "understanding music is centrally a matter of apprehending individual bits of music and immediate progressions from bit to bit" and that "musical form is centrally a matter of cogency of succession, moment to moment

[43] Bergson, *Creative Evolution*, 218.
[44] Jerrold Levinson, *Music in the Moment* (Ithaca, NY: Cornell University Press, 1997), 2.
[45] Levinson, *Music in the Moment*, 5.
[46] Edmund Gurney, *The Power of Sound* (London: Smith, Elder, & Co., 1880), 165.

and part to part."[47] The process of apprehending larger unities, such as melodies, beyond the immediate moment of perception Levinson terms "quasi-hearing:" "although one literally *hears* only an instant of music at a time, one generally *quasi-hears*, or vividly apprehends, a somewhat greater extent of musical material."[48] Thus, "a span of music is being quasi-heard when it is being experienced as throughout having something approximating the degree of presentness, wholeness, and immediacy that a phrase, melody, or melodic passage possesses when heard with comprehension."[49] Levinson's quasi-hearing is synonymous with what I would call *virtual* hearing.

Perhaps the closest contemporary musical theory to Bergson is articulated in Christopher Hasty's *Meter as Rhythm*.[50] Though Hasty's theory is not explicitly an application of Bergson's philosophy (Bergson is cited primarily to critique spatialized conceptions of time), the immanent retention and projection of durational spans as a primary and ongoing process of listening is exceedingly sympathetic to Bergson's concept of the virtual. (Hasty employs the term "virtual," but in the restricted sense of perceiving a metric articulation that does not correspond with the articulation of a sonic event; so, "virtual articulation.").[51] Hasty's theory could be adapted to incorporate specifically Bergsonian concepts and terminology, including the notions of virtual memory and the creation and deployment of virtual objects. The ideas developed in this essay ought to be read as a variation on Hasty's project.

In general, those authors whose thought emphasizes immanent process, action, and dynamic becoming are most successful in resonating with Bergson and the virtual (Hasty, Gurney (via Levinson), and J. Wilson-Bokowiec and M. A. Bokowiec). Less successful

[47] Levinson, *Music in the Moment*, 13-14.
[48] Levinson, *Music in the Moment*, 15.
[49] Levinson, *Music in the Moment*, 17.
[50] Christopher Hasty, *Meter as Rhythm* (Oxford: Oxford University Press, 1997).
[51] For discussion of virtual articulation see Hasty, *Meter as Rhythm*, pp. 89, 110, 120, and 130.

engagements are those that abstract away from musical experience, resolving into dualistic conceptions of subjects and musical objects. Some writers, such as Monelle, have mixed results. While he is able to articulate important points of Bergsonism (such as the role of intuition, the critique of spatialized time, and qualitative over quantitative interpretation), he tends to depict temporal experience as externally defined – determined by concepts *of* time developed within cultural milieus rather than by experience. Walter Frisch misreads Bergson altogether via a prosaic understanding of recollection and the notion of constructed listeners. In terms of recent trends in psychological research, more Bergsonian directions are those that move away from preestablished, stable catalogs or hierarchies (associationism) and instead move to a more flexible and agile processes of listening. And the dichotomy between the confirmation and denial of musical expectations, while moving in the direction of the prospective action of music, is too limited for a properly Bergsonian conception of the virtual past and its role in marking out prospective events.

IV. The Virtual as an Analytic Paradigm

Even if Bergson's concept of the virtual were deemed important to musical experience, it might be discounted as inaccessible to analysis; or it may be assumed that any concept of the virtual is destined to be inconsistent, subjective, or hopelessly interpretive (in the worst sense of the word). So establishing the *utility* of the virtual as an analytic concept will mean not only devising a consistent means of analytic extrapolation but also demonstrating the relative universality of its results. Its success will depend on how radically immanent the interpenetration between perception and memory is construed. The farther out the transaction – that is, the more general and preestablished the role of memory is – the less its connection can be with the

ongoing perception of events. We are led, again, to the presumption of a speculative interest on the part of the listener who waits passively for the occasional chance to inscribe an event with its identity. With this loss of vitality comes a loss of universality. The intervention of preestablished general memories presumes a common experience or conditioning outside of and prior to the actual temporal perception of the music. On the other hand, the more directly engaged and immediately responsive the role of memory is, the greater its connection to perception can be. And the more the interpenetration of memory is conceived as a function of the events of the actual piece, the more universality can be presumed of listeners.[52]

In order to create a musical-analytic technology to interpret the virtual process Bergson describes there will have to be a clear understanding not only of what is remembered on such a fine, moment-to-moment level, but of how these memories develop as nascent potential; how they "double" or penetrate perception; and, above all, how they reach beyond perception to create the vivid expectations and profound dynamics that are so characteristic of musical experience. As noted earlier, Bergson insists upon a radical distinction between the actual and the virtual, between perception and memory. We can see why this is so, for if the actual perception of music can consist only of fleeting moments, the capability of the virtual to reach beyond moments, to infuse the contents of perception with temporal breadth, would mean that its nature is of another order altogether. So we cannot assume that what is captured as virtual will be made of the same stuff as the perception whose imprint it reflects. This point is crucial. It will mean that a present event cannot be understood in relation to a past one in the sense that they

[52] By "more universal" I mean to calibrate the inclusiveness of the hermeneutic/analytic window in order to communicate with as many people who assert a common appreciation for a particular music as possible. It is a bad business to set out limiting conditions as to who is qualified or authorized to experience music (for example, with "culturally competent listeners" or Babbitt's "suitably equipped receptors"). I find it unsatisfying when hermeneutic or analytic projects produce results that apply little or no empirical standard (no attempt to reach a similar or common ground in relation to another musician's experience).

could be laid side by side and compared. Instead, the past event will be conceived as an active temporal image whose relation to a present event will be supplementary and dynamic, rather than relational or differential. The movement of perception and the virtual image accompanying it will unfold in time, interpenetrate, and transform.

An especially striking passage in *Matter and Memory* describes the sort of analytic process Bergson has in mind. It is worth quoting at length:

> Try first to connect together the discontinuous objects of daily experience; then, resolve the motionless continuity of their qualities into vibrations on the spot; finally, fix your attention on these movements, by abstracting from the divisible space which underlies them and considering only their mobility (that undivided act which our consciousness becomes aware of in our own movements): you will thus obtain a vision of matter, fatiguing perhaps for your imagination, but pure, and freed from all that the exigencies of life compel you to add to it in external perception. Now, bring back consciousness, and with it the exigencies of life: at long, very long, intervals, and by as many leaps over enormous periods of the inner history of things, quasi-instantaneous views will be taken, views which this time are bound to be pictorial, and of which the more vivid colors will condense an infinity of elementary repetitions and changes.[53]

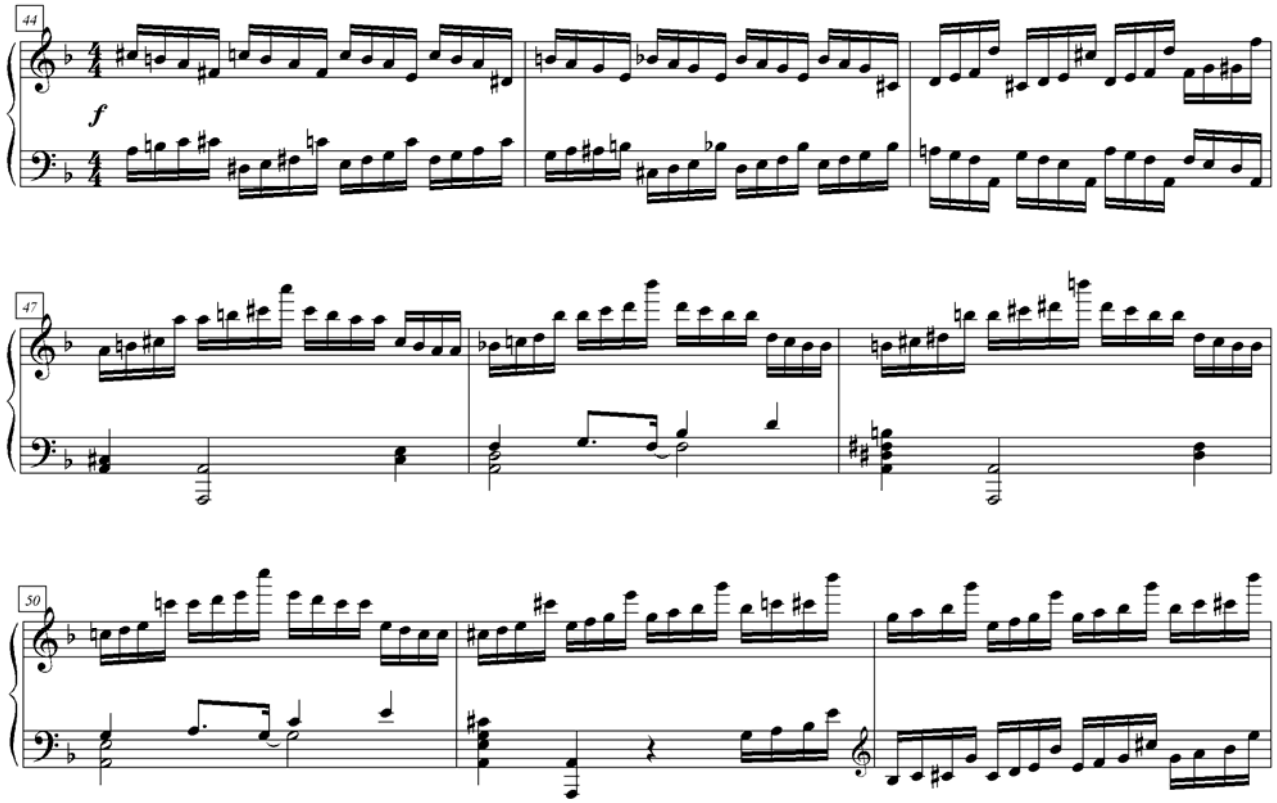
This is, undoubtedly, a most unusual procedure; one that suggests more the meditative practices of Buddhism or Hinduism than it does the modus operandi of an early twentieth-century European philosopher. But the intense concentration Bergson describes is conceivably similar to states composers and improvisers may place themselves in for maximal creative lucidity. Though it may be too ambitious to aim for a precise translation of Bergson's technique, adopting certain characteristics may yield a similar framework for a musical-analytic orientation (though what I take from it is by no means the only possible approach). These are: 1) thinking in terms of continuity rather than juxtaposition, 2) conceiving of *movement* rather than objects in a space, 3) isolating "quasi-instantaneous" moments, and 4) extrapolating the "inner history" of those moments, the repetitions and changes that form into qualitative intensities. Perhaps the

[53] Bergson, *Matter and Memory*, 208-9.

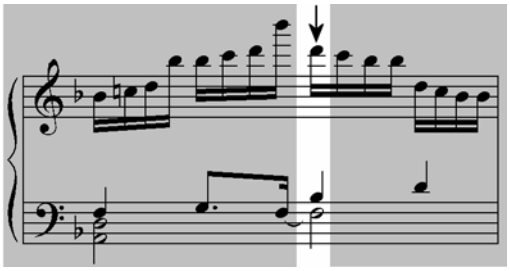
most significant feature of Bergson's technique is his strategy for reckoning with movement: of taking things one temporal section (in the sense of "slice") at a time. This approach affords access to other *virtual* moments bearing upon a given actual moment, tracking their evolution and transformation over time, and escapes the problem of a spatial conception where all the successive moments are thought simultaneously in relation to one another. By isolating moments Bergson envisions a way of peering inside *movement* to grasp an approximate image of the breadth of intensive content traversing time and space – the presence and influence of other times and of other movements within this time and this movement.

Before laying out the groundwork for an analytic methodology, I would like to fast-forward to a freer interpretation of Bergson's technique. The idea is to experiment with isolating and hearing *into* a musical moment, and to render a pictorial representation of its composite temporal depth. Hopefully this will yield a better sense of what the ultimate analytic objective of a more rigorous analytic method might be. For this purpose I have selected the third beat of measure 48 of Chopin's Etude No. 8, op. 10. Examples 1 and 2 place this moment in context:

Example 1: Chopin, Etude No. 8, op. 10, mm. 44-52

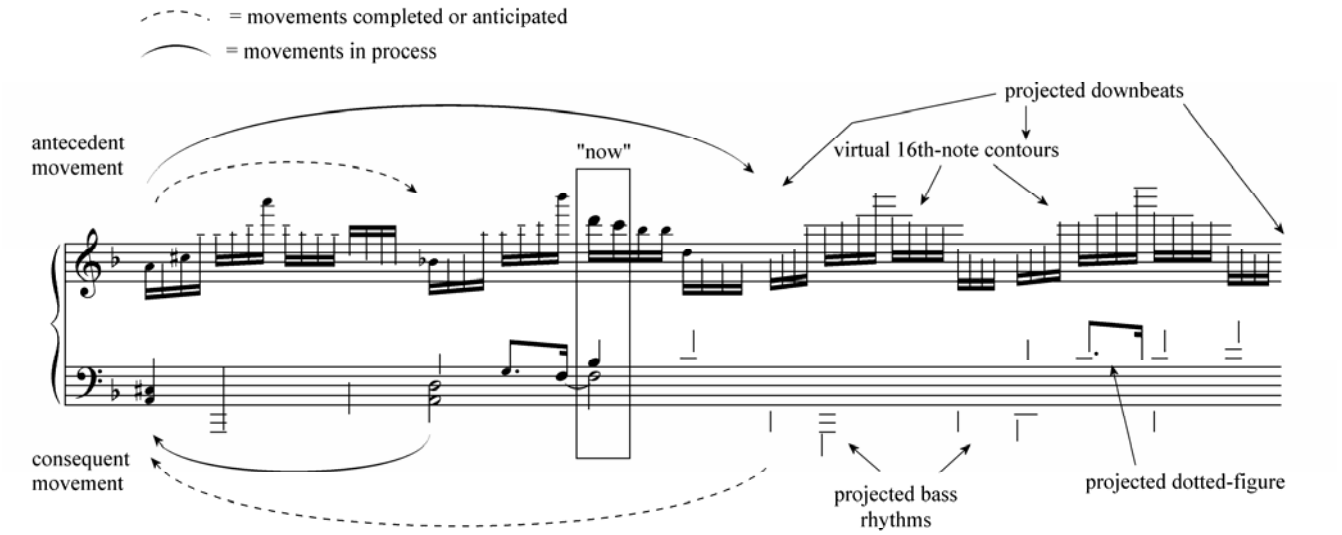


Example 2: Chopin, Etude No. 8, op. 10, third beat of m. 48



Example 3 presents an approximate pictorial representation of what I experience at the moment of the third beat in measure 48:

Example 3: Pictorial Representation of My Experience on the Third Beat of m. 48



Everything within the box ("now") is actual (though fleeting) sonorous perception.[54] What falls outside the box is also present, but virtual: *felt* in the present and inflecting the actual events of the present without being actually *in* the present (quasi-heard). I have taken advantage of notation technology as a means of unpacking what is experienced as temporal *depth* in order to represent it visually as spatial *breadth*. Though, horizontally, it appears as if the graphic depicts a single unit of time, the experience of all these virtual moments and shapes, forwards and backwards in time, is not one time, but many – like so many layers and resonances, temporal strata beneath and within the moment of sound engaging the ear.

Above and below the staff, curved arrows show the directions (or qualities) of movement (antecedent-consequent, downbeat-upbeat, etc). They define the scope of temporal presence, the articulations both coming and past, that is most salient in this moment. Large noteheads indicate

[54] The reader will note that what I am calling "now" is greater than an absolute (ideal) instant. "Now" as a duration is already multiple and indeterminate. The distinction between virtual and actual is not divided by any absolute point. There is always a mixture.

pitches that are actually sounding, while smaller noteheads represent pitches that continue to cast a hue on the moment. For the most part these virtual notes are suspended by the temporal folds of movement in a kind of kaleidoscopic array. Their times are still felt, as are their sonorities, in reciprocally articulated virtual planes. In the coming moments, repetitions of the arcing sixteenth-note patterns loom ahead. The left-hand gesture finds its double, its recurrence, nested two bars later. Combined with the expectation of a succession of coming downbeats the composite intensity of this moment is as vivid as it is particular and complex.

Though I only become conscious of these details in isolating and analyzing this moment, in the flow of hearing they are distinctly experienced as a compound, qualitative thinkness. It comprises a significant aspect of what makes this music musical. There is much more music in this moment than the moment itself can objectively contain, and this "more" is absolutely fundamental to the musical experience that it is. Were I to draw cross sections from later moments, a virtual environment of movements would continue to develop and transform. From this cinematic analytic perspective it becomes possible to track and analyze a web of subterranean musical dynamics – so vivid to the ear, but seemingly inaccessible to conventional analytic techniques.

Having gained a clearer picture of the virtual in music (as I conceive of it), we have a better sense of what a Bergsonian analytic technique might set out to accomplish. As the primary effect of the virtual is to cast perception into temporal relief, to experience, in a virtual rather than an actual way, a multiplicity of moments within this actual one, the conception of virtual content – what is "stored" by memory – should consist fundamentally of temporal articulation. A virtual object that has been retained in the course of a musical passage will reflect, above all, an articulated temporal body. The appearance of this object will be such that its beginning is

situated nearer to the present, the actual, than its end, which is the anticipated completion of the duration at a later time. This later time is held in a certain tension; a virtual awareness of the actual duration that comprises the motion from its beginning to its end. But beyond this, the virtual should be understood as consisting of more than generic spans of time. It is saturated with impressions of sound, contour, rhythms, and other looming qualities which can be quite explicit, or at least intensely palpable.[55] The number and complexity of temporal articulations capable of forming into a virtual object depends, in part, upon the beneficent occurrence of events within these durations that differentiate their number and complexity.

> What we have to explain, then, is no longer the cohesion of internal states, but the double movement of contraction and expansion by which consciousness narrows or enlarges the development of its content.[56]

From the passage above we may surmise that the general characteristic movement of the virtual is one of expansion and contraction of a temporal field. This field consists in the awareness or influence of other moments bearing on the present moment, or the actual. It also consists of qualities distributed among the objects in the virtual field. The virtual gathers perceptions into memories that are recast or returned upon perception, from the immediate doubling of perception, to the more remote memories whose useful potential has summoned it. Virtual objects indicating potential extensions of movement in time are redirected toward the actual as the form of their movement is followed. In other words, projections designating the temporal accomplishment of actions *return* toward the present moment as those actions are

[55] Musical performance is especially useful in conceiving of the function and effect of the virtual. A performer is always ahead of where the sounding music actually is (one sees this clearly by turning pages for a pianist). There is an awareness not only of what is happening at any given moment, but also of coming events, events not yet actual. These ever emerging forms, outlining temporal spans, approaching gestures, anticipated contours, the dim colors of nascent pitches, would constitute, properly, Bergson's designation of the virtual. It is difficult to imagine a more vivid example of the symbiotic movement between virtual and actual than in the performance of music. Unfaltering performance requires a robust and fluid cueing process of virtual musical images well out in advance of their conversion to the actual. Otherwise performance would be construed as an instantaneous series of flashes with no sense of direction or larger movement.

[56] Bergson, *Matter and Memory*, 166.

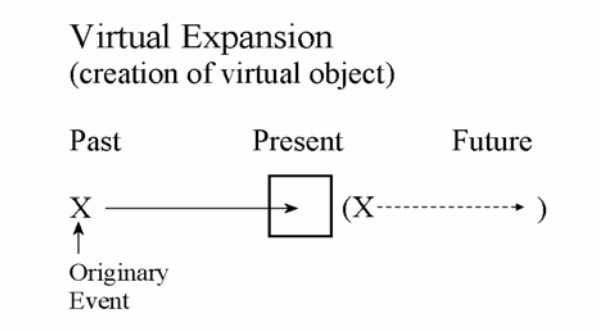
engaged. The virtual object expires as the form it indicates is completed by movement, its outlying extension having closed upon the actual. This complete return of the virtual object, from its virtual deployment, its actualization in movement, to its completion, is the conversion of the virtual to the actual.

In what sense does the virtual-temporal field expand and how does it expand? Expansion might be thought of as a loosely symmetrical enlargement of the sense in which a depth of past experience is reflected as a potential horizon of future action. As a sequence of events unfolds in time, a corresponding shape opens prospectively in which its consequent sequence might occur. The sharpness of its relief depends upon how steadfastly the beginning of the initial sequence is held in the memory. It would also depend upon the fortitude of the unfolding shape to "push away" from itself in a process of differentiation. Contraction, then, commences upon the recurrence of the opening event(s) of the initial sequence, or at least upon the digression away from the events that serve to differentiate the end of the initial sequence from its beginning.

Examples 4-7 depict this process of expansion and contraction. In Example 4 an originary event, such as the articulation of a chord or a series of notes, separates from the present – a past event whose definite connection with the present is still felt.[57]

[57] My analytic approach reflects Deleuze's designation of the "three syntheses of time." The first synthesis is the movement (or "contraction") of the present proper (the "aesthetic," *Difference and Repetition*, 109). The second synthesis is the preservation of the past in the present (the "analytic," *Difference and Repetition*, 109), while the third synthesis is the "pure form of time in which before and after coexist" (*Difference and Repetition*, 124), in which virtual objects transcend their place in the past to become actualized in future projections. The three syntheses "correspond to the figures of repetition which appear in the work of a great novelist: the binding, the ever renewed fine chord; the ever displaced stain on the wall; the ever erased eraser. The repetition-binding, the repetition-stain, the repetition-eraser" (*Difference and Repetition*, 114). He continues: "In one sense the third synthesis unites all the dimensions of time, past, present, and future, and causes them to be played out in pure form. In another sense it involves their reorganization... In a third sense, finally, the ultimate synthesis concerns only the future" (*Difference and Repetition*, 115).

Example 4: Virtual Expansion



The box labeled "present" contains what is now being experienced; a window of duration somewhat greater than an absolute instant.[58] To the right is the future potential for the originary event, or something corresponding or even contrasting to it, to occur. Simultaneously with the originary event having become past, and concurrent with its continued effect as a past event, its projected image is felt as a potential event that may occur again.

Example 5 shows the occurrence of another event that signals the virtual completion of what had been initiated by the original event.[59] In the simplest of cases, Y might be the cessation of a duration initiated by X. In more complex situations, Y could consist in the departure from a repeated rhythmic pattern or in a shift in harmony. In any case, there is a sense in which X has, over the course of a certain duration, differentiated itself *from* itself (represented by Y). The full body of this differen*t*iation [italicized "t" intentional] now exists, in virtual form, on both sides of the present; on one side, as an event accomplished and, on the other, as one that may be begun.[60]

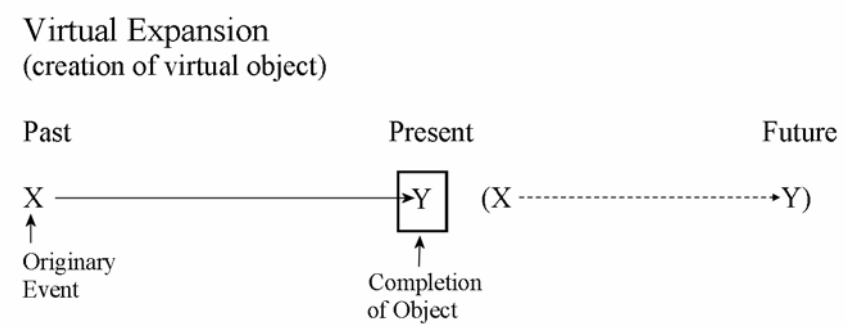
[58] The actual in music from a Bergsonian perspective would consist of musical perception itself, or what is heard. Though the artifice of music notation generally represents what is heard, we should not mistake the all-at-once presentation of a score for its actual manner of existence as the content of perception. In relation to a score, musical actuality could never be more than a narrow window continuously moving from left to right. This places a severe restriction upon what can be understood as a musical object. Any musical event greater than a fleeting moment would require some theory of process that allows past events to continue to bear upon present events.

[59] The terms X and Y refer only to the differentiation of an object at some temporal level. X by itself would not constitute a "singular" point, but consists of composites already. So, X is made up of at least X/Y at a lower temporal level. The Y opposes the X in the positive sense of that which differs from itself.

[60] Pearson writes: "What differentiates itself is first what differs with respect *to itself*, and this is the virtual" (*Philosophy and the Adventure of the Virtual*, 5).

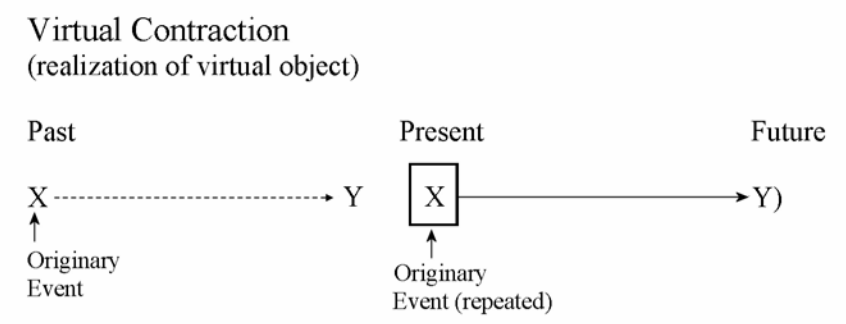
At this point we might say that the virtual field has reached its maximum extension, and is poised to contract. The virtual object, in its double form as both past and future, is now formed and is ready to be actualized.

Example 5: Virtual Expansion



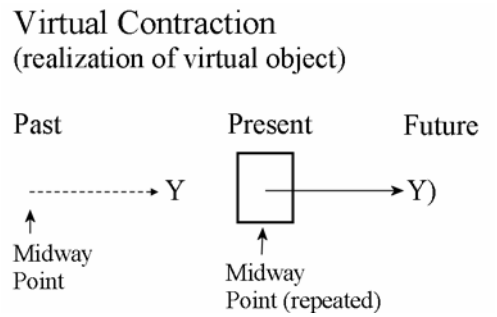
A process of actualization is begun in Example 6. What had been formed by X-Y is now being repeated by the recurrence of X. The full virtual body of X-Y is being re-crossed, and as this occurs the breadth or extension of the virtual field is now receding.

Example 6: Virtual Contraction



The process nears completion in Example 7, as the virtual object shrinks in relation to the passage of its body in relation to occurring, actual events.

Example 7: Virtual Contraction



The virtual object maintains a coexistence on either side of the present. Its body, having been extended through time, pushed backwards from the present moment, simultaneously unfolds a corresponding shape into the future, as an arc or form that can be initiated again. The overall theoretic model tracks two complementary processes: one, where perceptions are converted into virtual objects, the other where virtual objects are deployed in a process of actualization. Deleuze's conception of the virtual as a process – his specification of the coalescence of virtual objects – distinguishes these same operations, one in which virtual objects are formed, the other in which they are deployed as projections that merge with – materialize along with – real objects and events: "We call the determination of the virtual content of an Idea differen*t*iation; we call the actualization of that virtuality into species and distinguished parts differen*c*iation."[61] In the highly specific situation of musical events, it may be possible to theorize an approximate form of differen*t*iated events, the content of virtual objects, by the use to which, musically speaking, they come to be differen*c*iated. Conversely, the form of differen*c*iation itself, the installation or activation of a virtual object may direct the form in which its initial creation, differen*t*iation, might take place.

[61] Deleuze, *Difference and Repetition*, 207.

Perhaps the most important point is that the realization of a virtual object cannot be seen as a mere matching of identity, or the comparison of differences between elements of the same substance or medium. A virtual object must be different in kind from the perception that actualizes it, contributing to perception something it lacks – a larger form which it cannot, by nature, provide itself, as well as a dynamic envelope through which it is actualized. The temporal unfolding of the initial sequence, its differen*t*iation from itself, is the formation of a virtual object proper. The contraction of prospective virtual action, the future extension returning to the present, constitutes the actualization of the virtual object. Naturally, there is much potential in this double process of expansion and contraction for the creation of divergences, breaks, extensions, changes of rate, reversals or substitutions of qualities, and other musical effects. And each case would call for an original starting point for the textual labor of analysis.

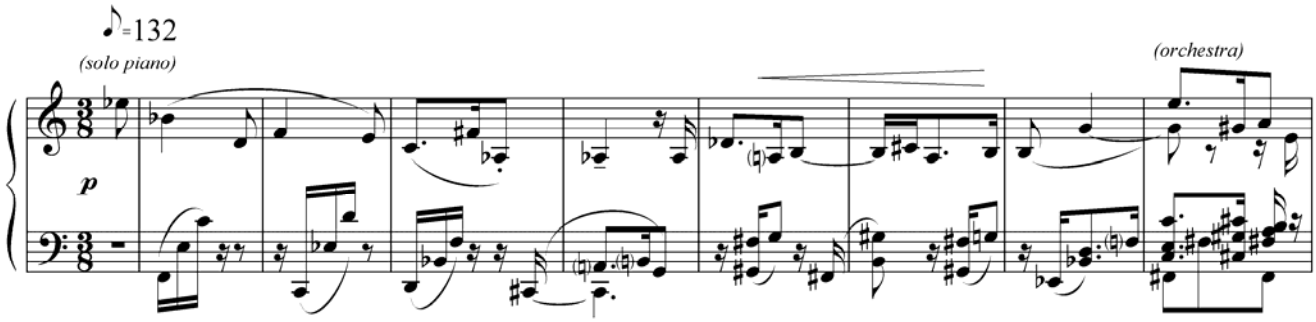
As virtual objects are suspended in temporal relief, the activation of a virtual object, its projection into the present event, will occur when an actual event resembles the *beginning* of a virtual object. Thus, an actual event which has triggered the activation or deployment of a virtual object is supplied with a virtual form which is felt to extend beyond it into the future. As actual events proceed, the virtual image is re-gathered along the way. The return over time of the virtual object designates the conversion of the virtual to the actual.

Repetition holds a complex responsibility in such a process. Repetition on lower levels can be seen as coalescing (or binding) into formations on higher levels; otherwise there would only be an undifferentiated, unchecked clustering of events into a single mass whose perceptual vitality would quickly reach a boiling point. The tendency to group repetition into pairs, where the second is a "soft" or upbeat relation to the first might prove to be a useful principle. But to get from the immanent level to a framing (or phrase) level suggests an intermediary stage of

phrase formation where repetition pushes against or differentiates more strongly than it complements or groups. "Hard" repetition, repetition that is invariant or in which its difference *from* repetition is weighted toward the end rather than toward the beginning of the object, may contribute to this effect. In order to actualize an outer limit or extension (a virtual envelope on the level of phrase group or period), a "soft" repetition, one that announces its difference from repetition at its outset, creates the feeling of return or closure. In the sequence illustrated by Examples 4-7, whether the actualization of the virtual object *also* initiates the formation (differen*t*iation) of a virtual object at a higher level depends on the nature of the recurrence of X-Y: how strongly it differen*c*iates itself from the initial occurrence (that is, how robust its repetition is).

To illustrate these concepts with a musical selection, I turn to the opening phrase of Schoenberg's Piano Concerto, op. 42, shown in Example 8.

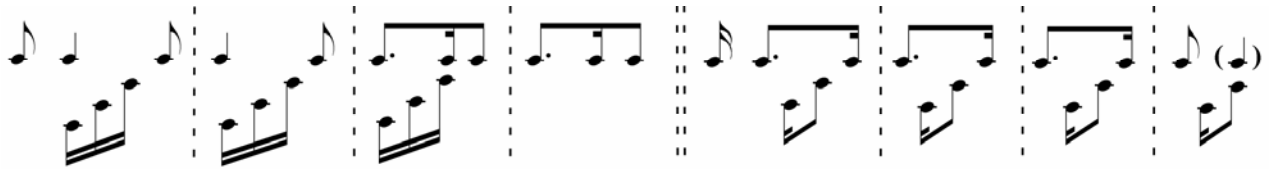
Example 8: Schoenberg, Piano Concerto, op. 42, beginning



The opening passage of the concerto beautifully establishes the lilting quality and elegant phrasing that will characterize the entire work. The first seven bars consist of solo piano only, with a brief orchestral interjection in bar eight. In analyzing the virtual in the formation of this phrase, I first consider how repetition is deployed. Repetition produces binding effects that

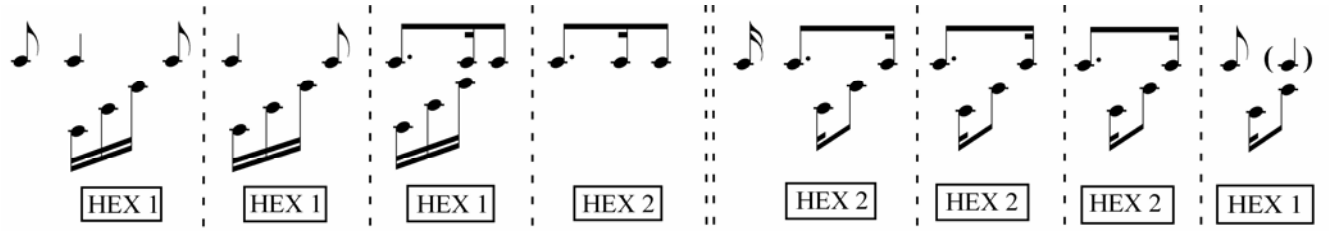
constitute the palpable virtual forms differen*t*iated and differen*c*iated. Distinct patterns emerge in both the rhythmic and pitch domains. The right-hand melody consists almost entirely of short-long rhythms. For the first four bars, these are articulated in eighths and quarters. Midway through the rhythms quicken to sixteenths and dotted eighths. In the left hand these short-long rhythms are accompanied by sixteenth-note arpeggios, which form a series of at least three sixteenth-note articulations aligned with the long notes of the right hand. Rhythmically, a consistent compound shape is repeated throughout the phrase, with subtle variations and a rhythmic modulation (quickening) at the midway point, shown in Example 9:

Example 9: Rhythmic Shape of Schoenberg's Piano Concerto, op. 42



The pitch content reinforces this reading of the rhythm: a phrase consisting of two parts with four events or segments in each part. In both parts, the segmentation is buttressed by harmonic changes occurring on the fourth event, separating or differentiating it from the preceding three. The first three segments of the first subphrase circulate the hexachord B flat, C, D, E flat, E, F (hexachord 1), while the fourth segment consists of the hexachord F#, G, A flat, A, B, C# (hexachord 2). These hexachords repeat in the second subphrase, but in reverse order, as shown in Example 10:

Example 10: Hexachordal Content of Schoenberg's Piano Concerto



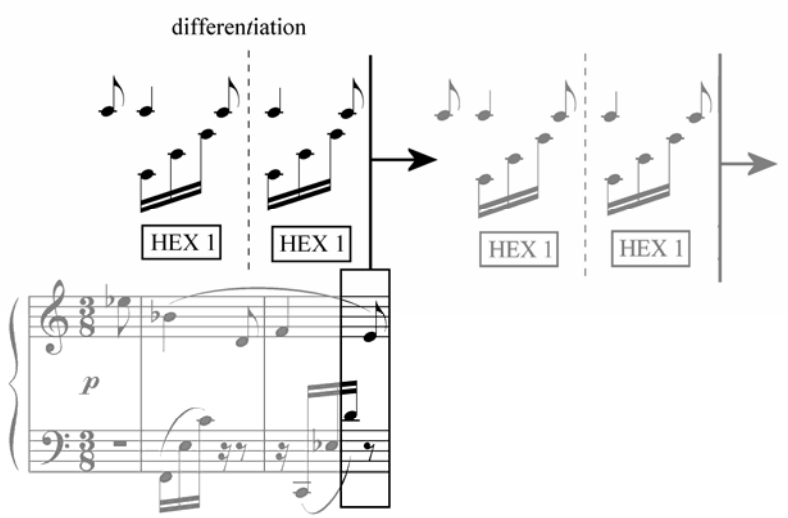
Repetitions of rhythm and harmony work reciprocally in a process of binding and segmenting the musical form. While this segmentation and profile is directly related to the virtual experience that will manifest it, a proper analytic attunement to the virtual depends on returning to a temporal conception. From a temporal (moving, a-centered) point of view we are in a position to see how a complex virtual object is differen*t*iated and then differen*c*iated over the course of the phrase, and how, on a larger level, the entire phrase can be understood as a virtual whole.

Generally, repetition might be seen as performing certain basic functions in the overall ensemble comprising the virtual object. Its most fundamental function is that of self-differing: rather than one repetition being the same as another, it is *different* from precisely that which it repeats. The process of self-differing rises from the ground up, where duration is the differing of a tone from itself in time (pure repetition). On higher levels repetition clusters and groups separate events into virtual wholes where another function comes into play, which is to break up repetition on one level with that of another in order to de-center, mark, and destabilize more complex virtual object(s). The resulting asymmetries produce differen*t*iated compound forms with dynamic, immanent properties. In Example 10, a change in harmony in the 4th event further differentiates the second two segments from the first two (and therefore the first four from itself),

so that, as *hard* repetition, they add to and expand the virtual object, rather than complement and close it.

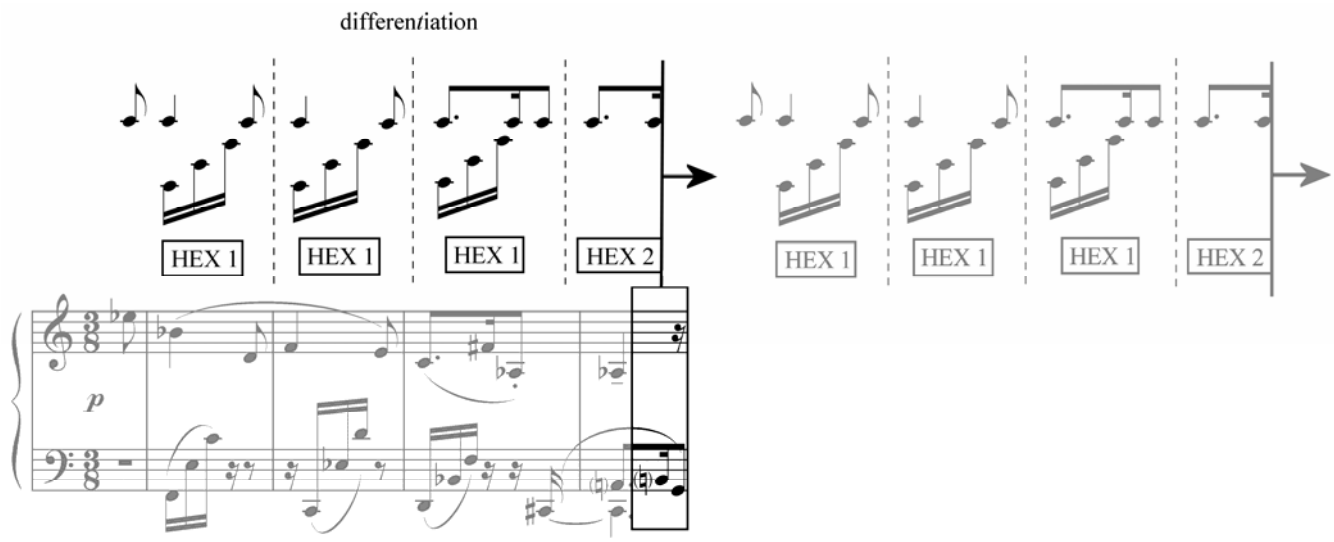
Conceiving of the phrase in time, now, Example 11 tracks the process of differen*t*iation of the virtual object in the first two bars:

Example 11: Differen*t*iation of the Virtual Object



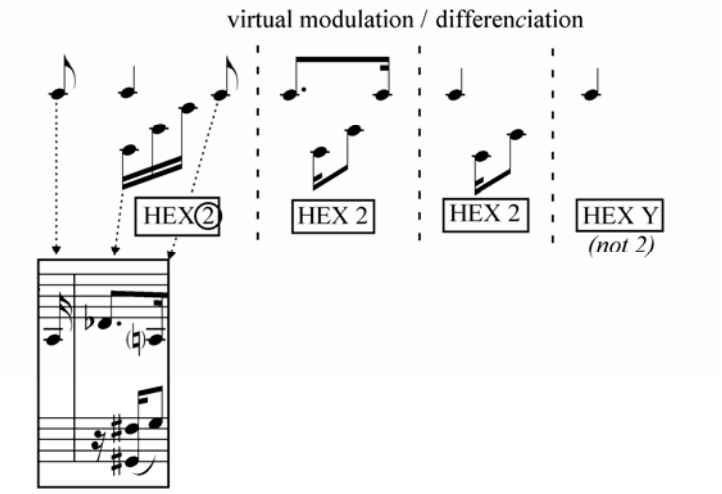
In what follows, subtle shifts in rhythm trigger what can be heard as a complementary (soft) repetition. The second pair of bars answers the first and, on this intermediary level, a contraction of the virtual object occurs (which will prove to be an object within an object). However, the continuation of the overall rhythmic patterning combined with the harmonic change in the fourth bar inscribes the complementary bars with a difference *from* repetition (hard repetition) that differen*t*iates the virtual object on a higher level, shown in Example 12:

Example 12: Hard Repetition



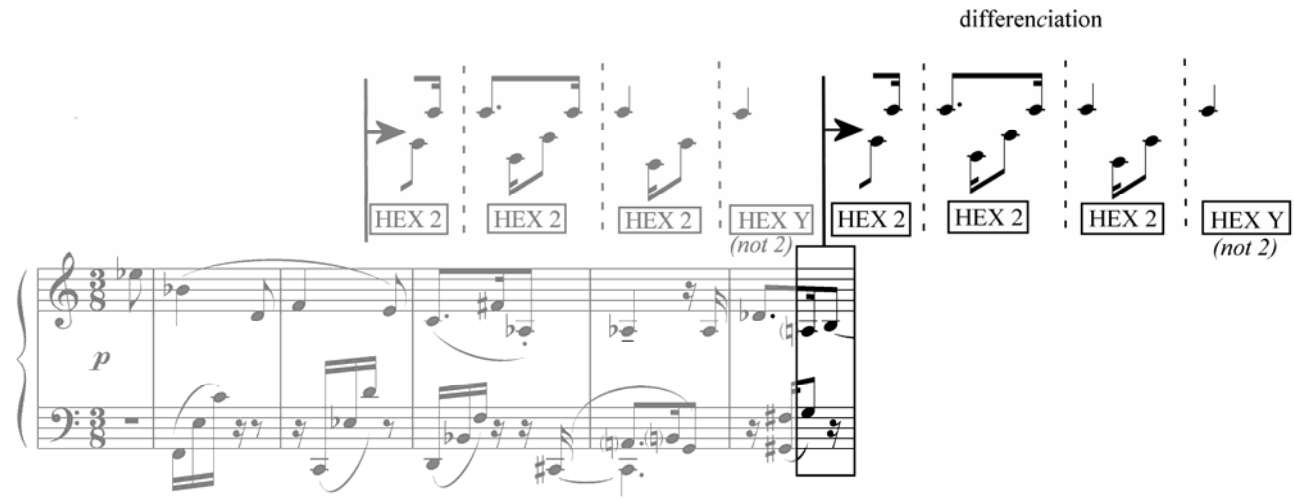
With the register transfer and harmonic change in the fourth bar, the virtual object is poised for actualization (differen*c*iation). Example 13 illustrates how actualization is initiated. In repeating the short-long-short pattern (with its accompanying sixteenth note figuration), the virtual object is activated (repeated), but the continuation of the harmony (hexachord 2) as well as the compression of the rhythmic patterning breaks the pervasive differen*t*iation on the phrase level. In what I call a virtual modulation, these initial shifts have a ripple effect through the rest of the virtual object. The remaining long-short rhythms collapse to the left, and the harmonic pattern of 3+1 is projected onto them (the second hexachord is anticipated to fill out the next two segments, with a departure from that harmony in the fourth event):

Example 13: Initialization of Actualization

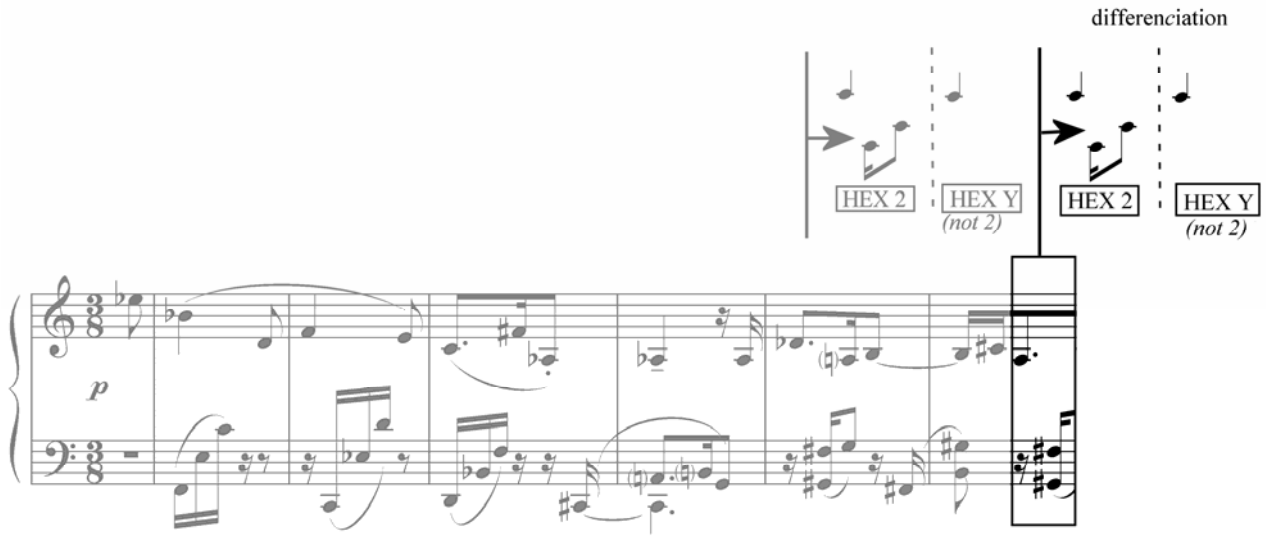


Examples 14-15 show the consequential virtual contraction (soft repetition) over the remainder of the phrase:

Example 14: Virtual Contraction (Soft Repetition)



Example 15: Virtual Contraction (Soft Repetition)



The sharpness of relief of the virtual object in its differen*t*iating phase both structures the hearing of what follows as well as is transformed by it. One of the unique virtual effects of this particular passage is the consequence of the compression of the object in its differen*c*iation, for there are *two* projected durations: the repetition of the compressed object implies its completion at a certain future time. But this time is sooner than the overall time it would take to repeat (or "fill") the time marked out by the first half of the phrase. This temporal split is a dynamic musical affect unique to this passage. A kind of temporal vacuum opens up in the future, which is only filled by the interjection of the orchestra in the eighth bar. The tension is released, and the space for a new phrase is prepared.

Adapted to music, Bergson's concept of the virtual designates a continuous process, an ever-unfolding landscape of heard sound infused and inflected with the virtual planes that develop *before* the actual moment, this in the sense not only of what has come before (and is now past) but, simultaneously, what lies ahead of an ongoing event as the virtual musical environment into which it flows and whose dynamic promise it receives. The responsibility of an

analysis of this process is to understand how passing events re-emerge as prospective – virtual – events which lend color, shape, and energy to the musical moment. Though much depends on the ear and the analytic imagination of the theorist, it is important to stress Bergson's conception of the virtual as a rigorous and precise philosophical technique. I also believe that further development of a Bergsonian analytic technique will involve Deleuze, especially in reconsidering the meaning and function of musical repetition.

> Repetition is everywhere, as much in what is actualized as in its actualization. It is in the Idea to begin with, and it runs through the varieties of relations and the distribution of singular points. It also determines the reproductions of space and time, as it does the reprises of consciousness. In every case, repetition is the power of difference and differenciation: because it condenses the singularities, or because it accelerates or decelerates time, or because it alters spaces.[62]

V. Conclusion

The purpose of this essay has been to come to a better understanding of Bergson's concept of the virtual, particularly as it is developed and understood by Deleuze, to argue that a precedent exists for the virtual as a valid analytic category, and to suggest a possible avenue of further research. As we have seen, Bergson situates perception and memory in an interpenetrating tension directed at the action of the moment. In this state, the office of memory, as supplying perception with a temporal depth different in kind from perception itself, creates a virtual field in which the past coalesces in memory while emerging as projected actions. I have argued that not only is the virtual a vital part of musical experience, it is already established as such, to a degree, in the form of other concepts and under other terms. I proposed an analytic paradigm intended to approach the virtual in musical experience, focused on the creation (differen*t*iation) and actualization (differen*c*iation) of virtual objects. In theorizing the form and

[62] Deleuze, *Difference and Repetition*, 220.

function of virtual objects, I concluded that Deleuze's concept of repetition suggests a way forward, a starting point for conceiving of the virtual as a process of formation and deployment, both on the immediate level as well as on aggregate levels, where objects form and deploy, only to be enveloped into larger formations. While to lay out such a technique methodologically well exceeds the scope here, I believe Bergson's concept of the virtual brims with potential for developing new and productive ways to understand the depth, power, and novelty of musical expressions.

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