



Musical Objects: Response to John Covach

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REFERENCE: <http://www.mtosmt.org/issues/mto.94.0.11/mto.94.0.11.covach.html>

KEYWORDS: object, signal, sensation, perception, cognition

[1] Having just delivered a paper entitled “In Search of Musical Events” at the 12th IAPR International Conference on Pattern Recognition in Jerusalem,⁽¹⁾ I feel at least somewhat qualified to comment on John Covach’s work-in-progress on the destructuring of Cartesian dualism. The original working title of this paper was “In Search of Musical *Objects*,” but the word “events” was substituted at the advice of Al Bregman, who had solicited contributions for this particular session of the conference. Admittedly, I wrote this paper wearing an engineer’s hat, which rarely resembles any philosopher’s hat in either form or function. Nevertheless, I offer up my antithesis to John’s thesis in the Hegelian spirit that some synthesis may emerge (unless the mass of memes goes critical, setting off a chain reaction which blows us all to bits).

[2] Actually, Bregman’s suggested modification of my choice of words very much reflects the Heideggerian spirit which is the basis for John’s thesis. However, without appealing to such concepts as situation-in-a-context, we can still appreciate the difference simply because of the temporal dimension. Confronted with the stimulation of the retinal field, eventually the cerebral cortex has to draw some conclusions about *what* objects are there. While visual perception is far from a static process, for purposes of investigation and discussion, we can still “freeze” certain visual stimuli, scrutinize their properties, and try to relate those properties to models of the signal processing which takes place along the path from the optic nerve to the cerebral cortex. Such “freezing” is not possible in the auditory domain: Freezing entails halting time; and when time stands still, there can no longer be sound. Events are products of the passing of time, and Heidegger’s spirit is honored because it makes more sense to ask *how* events are perceived in the course of time than to ask *what* events are, as if they were the sorts of Cartesian objects which occupied Heidegger’s critique.

[3] The consequence of this distinction is that we still know far less about auditory perception than we do about visual perception. This is because, at the level of nuts and bolts, it is far harder to control the stimuli. Consequently, experimental psychologists continue to work with sine tones and only the most elementary of sequencing patterns and tend to throw up their hands in despair when a music theorist asks what any of this has to do with a Beethoven piano sonata.⁽²⁾ The problem is that we still lack adequate models of time consciousness; and our understanding of what Gerald Edelman calls the “organs of succession”⁽³⁾ in the brain is still preliminary. Because hearing *requires* the passage of time, our knowledge of how we perceive events will probably have to wait on better models of how the brain processes time.

[4] On the other hand, Heidegger’s work is beginning to have a positive impact on cognitive science (the discipline in which those of us who wear our engineers’ hats try to think about questions of mind). To draw upon John’s vocabulary (which is generally far more accessible than Heidegger’s—particularly to engineers), the key word in the whole story is “interact.” Cartesian objects exist independent of our interaction with them. Heidegger’s world is one in which we interact with a context in which we are situated, and that context consists of many objects interacting among themselves and with us. The role of mind in this complex of interaction is now called *situated cognition* in the cognitive science community.⁽⁴⁾ While once Heidegger was an inspiration to philosophers who argued that artificial intelligence was an impossibility,⁽⁵⁾ now he is viewed as providing an alternative way of looking at computers.⁽⁶⁾

[5] Nevertheless, there is always a danger in trying to sort things out by assigning them to one extreme or its opposite, developing what Marvin Minsky likes to call “dumbbell theories.”⁽⁷⁾ The issue is not one of whether we perceive Cartesian

objects or interact with Heideggerian ones. Both are important; and this becomes particularly evident when we try to talk about “measuring,” as John does in his paragraph [10]. Before we talk about “measuring,” we have to recognize that there are different “things” we can measure. My own proposal is that we distinguish *signals*, *sensations*, and *perceptions*. Signals are unabashedly Cartesian objects. For purposes of discussing music they include bits on a CD or pixels in a score image.⁽⁸⁾ Sensation only exists by virtue of our sensory apparatus, and no two of us are ever identically equipped.⁽⁹⁾ Sensory transforms, however, precede the cerebral cortex and therefore precede that sort of *interpretation* which only consciousness can provide. Perception is thus the cognitive interpretation of sensation, requiring the full resources of mental state provided by consciousness.

[6] Once we bring mental state into the picture, however, we discover that the concept of a “musical world” as a source of a context for situation is too narrow. Indeed, the context can never be narrower than *all* of mental state. Put another way, a musical experience induces a mental state which, in turn, governs the interpretive act of perception. What is important is that the mental state we are in may also be due to *extra*-musical inputs. We may be just as influenced by what we just had for dinner, a bulb flickering in the chandelier, or the conductor’s haircut as we are by the auditory stimuli we are receiving.

[7] In conclusion I applaud John Covach for undertaking his work-in-progress and sharing his “progress report” with us. However, the thing about progress reports is that they often say more about what needs to be done than they do about what has been achieved. John’s agenda could ultimately be as valuable to cognitive science as it is to music theory; but mining that value will occasionally require setting the philosophers aside and recognizing that engineers have to worry about solving problems, too!

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Footnotes

1. Stephen W. Smoliar, “In Search of Musical Events,” *Proceedings: 12th LAPR International Conference on Pattern Recognition* Volume III (1994): 118–122.

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2. The alternative is to swing the pendulum to the opposite extreme, as in Lucy Pollard-Gott, “Emergence of Thematic Concepts in Repeated Listening to Music,” *Cognitive Psychology* 15 (1983): 66–94. Pollard-Gott jumps feet first into the Liszt B Minor piano sonata, using it as data for an experimental investigation of how different listeners hear and recall themes. There are no reports of any preliminary studies based on potentially more “accessible” data, such as Mozart’s variations on “Ah, vous direz-je, Maman!”

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3. Gerald M. Edelman, *The Remembered Present: A Biological Theory of Consciousness* (New York: Basic Books, 1989), chapter 7.

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4. Philip E. Agre, “Book Review: *Plans and Situation Actions: The Problem of Human-Machine Communication*,” in William J. Clancey, Stephen W. Smoliar, and Mark J. Stefik, eds. *Contemplating Minds: A Forum for Artificial Intelligence* (Cambridge, MIT Press, 1994) 223–238.

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5. Hubert L. Dreyfus, *What Computers Still Can't Do: A Critique of Artificial Reason* (Cambridge: MIT Press, 1992).

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6. Terry Winograd and Fernando Flores, *Understanding Computers and Cognition: A New Foundation for Design* (Reading, Addison-Wesley, 1988).

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7. Marvin Minsky, *The Society of Mind* (New York: Simon and Schuster, 1986), section 11.9.

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8. I regard an appeal to the “analog” nature of the world as a red herring. We can always pack our bits into higher resolutions as the situation demands. The important thing is that those bits are about as Cartesian as you can get.

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