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Response to Comments

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Ordering and Logic in Music Signification

[1] David Lewin's comments about my article point out how the codes we use to represent pitch—either numbers of letters—impose order on the pitches. The impulse to order does indeed seem to be at least a very deep cultural convention. It presents some difficulties to children learning about pitch classes, of course, when they must remember that A comes "after" G. Even 0 coming after 11 is not immediately intuitive to younger musicians (born into a culture which, as Douglas Adams says, thinks digital watches are a pretty good idea).

[2] However, to a certain extent we learn about pitches as ordered irrespective of the conventions we use to name it. For example, a fledging pianist learns about pitch structure by playing with the *right hand* an *ascending white key major scale*. Certainly there are pragmatic reasons for some of these conventions. Playing white keys requires no forward displacement, whereas black keys are forward and up in physical space. (Anyone want to study how physical motions required by the layout of keyboards correlate with musical structure?) And most people have better motor control over their right hand. But why play the "ascending" scale going up? It's harder than "descending", and it is not typical of closural musical behavior. (Many music majors I teach prefer closing their soprano lines with a high $\hat{7}$-to-$\hat{1}$ scale-degree succession, rather than low $\hat{2}$-$\hat{1}$ or $\hat{7}$-$\hat{1}$; I'm sure this comes from practicing ascending scales; as non music- majors that have less or no performing experience seem to prefer low closure.)

[3] It also occurs to me, after reading Lewin's ruminations about whether we can name things without listing them, that musical relations, although not intrinsically ordered, can help induce order on collections of nonmusical sememes. A famous mnemonic for the kings and queens of England uses musical (and poetic) properties of meter and timbral association (end rhyme), among other devices, to induce various partial orderings among the names.

Willy, Willy, Harry, Ste,
Harry, Dick, John, Harry Three,
One, Two, Three Neds, Richard Two
Henry Four, Five, Six—then who?
Edward Four, Five, Dick the Bad,

Harries twain and Ned the Lad,
Mary, Bessie, James the Vain,
Charlie, Charlie, James again,
William and Mary, Anna Gloria,
Four Georges, William and Victoria,
Ned Seventh ruled till 1910,
When George the Fifth came in, and then
Ned went when Mrs. Simpson beckoned,
Leaving George and Liz the second.(1)

[excluding Lady Jane Grey, the kings and queens of England, in chronological order, are William the Conquerer, William II, Henry I, Stephen, Henry II, Richard I, John, Henry III, Edward I, II, and III, Richard II, Henry IV, V, and VI, Edward IV and V, Richard III, Henry VII and VIII, Edward VI, Mary I, Elizabeth I, James I, Charles I and II, James II, William II and Mary, Anne, George I, II, III and IV, William IV, Victoria, Edward VII, George V, Edward VIII, George VI and Elizabeth II.]

So while some of our sign systems impose orderings on music, music systems are also capable of inducing ordering on other semantic systems.

[4] Stephen Smoliar expresses some justifiable skepticism about semiotic views of music. I understand much of his trepidation. Semiotic theory, by claiming that anything can serve as a sign-vehicle for anything else, poses an apparent challenge to the hegemony of positivist thinking upon which much science and some music theory is founded. I take comfort in the view that the *possibility* of a multiplicity of denotative systems does not imply that they are all equally valid or useful to a particular musical culture. In my article I restricted my application of semiotic theory to exposing meaning or misrepresentation. I do not claim that Schumann's analysis is more meaningful to us than our own approaches, only that it has more meaning that we might be led to suppose by confronting the text that apparently signifies refers to little musical content.

[5] Smoliar also says: "I find it a bit difficult to wade through much of the arcane language of the semiotic theorists when it seems to me as if it could all be articulated so much easier in LISP. (This is not to say that LISP solves all problems. Rather, it often helps us to formulate clearer questions, even when answering those questions turns out to be very difficult.)" Although I too have used LISP and Prolog representations extensively to help formulate my own and others' theories, I find myself disagreeing with Smoliar that AI representations should be privileged. Symbolic and logic-based representations have limitations that I have discussed elsewhere. Briefly: "While [a symbolic logic representation] of musical structure is based mainly on the knowledge of event properties, the information in a mere property list is insufficient. Just to represent all the types of segments ... (let alone incorporate them into more abstract structures!) we must also know which event relations are transitive, which are commutative, and which induce order (for example, pitch does, timbre doesn't); we must know the boundary-defining values for various properties; we must know how segment-defining collective properties of segments relate to the properties of their events; and we must know of segment-defining processes, relations, or properties external to the sonological data at hand. [There are other] specific weaknesses of a propertied-event representation of atonal music, in which an event always has a given property and all properties are equally available for determining a relation . [The representation runs] counter to our musical intuitions that registral lines have a different quality of coherence from that of chords, intuitions partially expressed by the distinctions we have made between various musical properties in defining the other types of segment. Similarly, the strength of segmental associations depends crucially upon the nature of the event properties from which the collective property of the segment is derived."(2)

[6] Smoliar's main point is that since "description is not so much a matter of the describing agent passing a code to the receiving agent as it is a matter of the two agents mutually negotiating towards a point where they have some confidence that they are both talking about the same thing," that theories of music analysis should focus on the negotiation. I agree that the negotiation process is important to description, but what are the agents negotiating about except the codes that they will use? We must still be able to evaluate the agreed-upon codes critically, and Eco's theory helps us do it.

[7] Some readers may wonder, in light of the current discussion thread about the nature of the musical work, what "music" is

being modeled in the systems I cite. My article was vague about the nature of the musical work; referring to it only as the semantic plane, and to its contents only as "psychophysical quantities". This perhaps simplistic term reflects my belief that some of "the essence" of a musical work is rooted in common way humans—composers and listeners—perceive sound and sound relations. Some intersubjectivity is genetically programmed. Certainly there is also a strong cultural component to "the essence of a work", because what we hear as essential can be altered by experience and practice (we call it "ear training"). But this problematizes the notion of an invariant essence that is more than raw psychoacoustic quantities that "anyone" can hear. However we understand the essence of the work, I hope the point of my article is clear that we should be careful in constructing sign-vehicles to represent it.

[8] Reader's interested in a more modern, and very complex "literary" analysis should look at Anthony Burgess's "Stendhalian transcription" of Mozart's K. 550 in *On Mozart: A Paean for Wolfgang*, Boston: Houghton-Mifflin, 1991, pp. 93–103. (Feminist scholars may also be interested in the gender stereotypes in this narrative.)

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Footnotes

1. Susan Ferraro, *Remembrance of Things Fast*, New York: Dell Publishing, 1990, p. 17.
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2. John Roeder, "Issues of Representation in the Analysis of Atonal Music," in *Proceedings of the First Workshop on Artificial Intelligence and Music, St. Paul, Minnesota*, Menlo Park: AAAI, 1988, p. 147. See also John Roeder, "Logic-Programming Models of Music: A Semiotic Evaluation," in *Music and Science*, Seattle: Center for the Creation and Interdisciplinary Study of Music, University of Washington, 1991, pp. 16–36.
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