Excavating Lewin's "Phenomenology"

BRIAN KANE

David Lewin's "Music Theory, Phenomenology, and Modes of Perception" is a touchstone for phenomenologically influenced music theory, yet something puzzling remains about the role of perception in Lewin's phenomenology. On the one hand, Lewin emphasizes the embodied nature of perception by arguing that perception is itself a type of skill, a "mode of response," which manifests itself in an infinite number of creative acts. On the other hand, he explicitly employs phenomenology in only a limited manner; in Parts I–III of his essay, he sets up his phenomenological "p-model," and then, in Part V, critiques it as ultimately inadequate for forging a link between perception and creation.
In this essay, I offer a solution to this puzzle by examining Lewin's sources. I argue that he is indebted to the school of West Coast phenomenology in two respects: (1) that Lewin's style of phenomenology is influenced by the Fregean interpretation of Husserl, which supports the ontological and categorical split between perceptual sense and reference presented in the p-model; (2) that the general argument presented in Lewin's essay, which moves from the p-model toward a critique of disembodied perception, is modeled on Hubert Dreyfus's two-stage argument against Artificial Intelligence.

Keywords: David Lewin, phenomenology, Husserl, Frege, Miller, Dreyfus, Føllesdal, Artificial Intelligence, perception, embodiment, p-model

David lewin's essay "music theory, Phenomenology, and Modes of Perception" has, like no other text, established phenomenology as a viable method within music theory.[1] Three years before the publication of Lewin's article, Nicholas Cook could generalize that "A common failing of writers on musical phenomenology is to spend so long on theoretical prolegomena that they never address music."[2] This statement would have to be revised in light of Lewin's work, for a major portion of his essay is dedicated to the introduction and application of a phenomenologically influenced perceptual model, the "p-model," which is used to parse finely a small passage from Schubert's "Morgengruß." Through use of the p-model, Lewin's analysis hinges on moments in which the meaning of a single chord cannot be definitively stated independent of the context, expectations, and analytical language in which it is embedded. Lewin encourages his readers to abandon any ontology of music that conceives of chords as reified entities, distinct from the meaning they accrue in musical contexts. The p-model is offered as an analytical method that "enables us to bypass certain false dichotomies in analytic discourse, dichotomies that arise when we implicitly but erroneously suppose that we are discussing *one* phenomenon . . . when in fact we are discussing *many* phenomena. . . ."[3]

But the p-model is not the end of the story. Lewin's essay goes further, arguing that music theories can be "goads to musical action," a view which requires a step beyond a theory of musical perception alone toward an active, or creative, musical theory. He asserts, "Since 'music' is something you *do*, and not just something you *perceive* (or understand), a theory of music can not be developed fully from a theory of musical perception. . . ." Thus, Lewin asks the reader to rethink the role of perception in music-theoretical discourse and makes a gesture toward the necessity of developing music theories that link perception with creation. This link is to be found in a reconception of music theory as itself a creative, or even poetic act. Lewin calls this position "post-Bloomian," arguing that "the perception of a poetic work resides in the (active) making of another poetic work."[4] By drawing together perception and action, he discourages the reader from conceiving of perception as a disembodied process—it is not simply receptive, but rather performative, creative, and generative.

Yet there remains something puzzling about Lewin's phenomenology. On the one hand, his emphasis on the active, embodied nature of perception shows great affinities with the phenomenological project of Merleau-Ponty, or Heidegger in *Being and Time*—what I will generally refer to as "post-Husserlian phenomenology." Many of Merleau-Ponty's early writings engage in a critique of disembodied models of perception in favor of a holistic theory incorporating embodiment and action. In *The Phenomenology of Perception*, Merleau-Ponty emphasizes the interrelation of perception and action by situating perception within the framework of skill acquisition, habit, motor intentionality, and bodily schemata. Lewin's argument is congruent by arguing that musical perception is itself a type of skill, built up over time, which can manifest itself in an infinite number of creative responses: playing an instrument, sketching an analytical graph, composing a new piece, noodling at the piano, etc. On the one hand, Lewin had some familiarity with this

1 Throughout this essay, I will be citing the reprint of "Music Theory, Phenomenology, and Modes of Perception" in *Studies in Music with Text* (2006).

2 Cook (1983, 292).

3 Lewin (2006, 79), italics in the original.

4 Ibid. (96 and 103).

work, because he cites a number of sources that deal explicitly with post-Husserlian phenomenology, the most relevant being Judith Lochhead's dissertation (of which he was a reader), Don Ihde's *Listening and Voice*, Thomas Clifton's *Music as Heard*, and Hubert Dreyfus's introductory essay to *Husserl, Intentionality, and Cognitive Science*.[5]

On the other hand, Lewin explicitly uses phenomenology in only a limited manner; namely, in Parts I–III of his essay, he sets up his phenomenological p-model and then, in Part V, he critiques it as ultimately inadequate for the forging of a link between perception and creation. Arguing that phenomenology is still too bound to the passivity of perception, Lewin writes:

> This link in the chain of perception-and-creation is missing in the perceptual theories we have so far considered, including my own p-model. . . . Perhaps the link can eventually be forged. . . . After all, Husserl calls perception a mental act, and describes it as extraordinarily creative. I do not see as yet, though, how he might distinguish and relate what we call acts of listening, acts of performing, and acts of composing, as varieties of *perceptual* response in various musical contexts.

Why doesn't Lewin explicitly address post-Husserlian strands of phenomenology, which are congruent with his aims in Part V? Why is phenomenology deployed only to critique the reified notion of perception *vis-à-vis* the p-model, but then abandoned when it comes to the question of perception as embodied action? In what follows, I will offer an answer to these questions based on an investigation of the phenomenological sources cited by Lewin. My method will be primarily that of the intellectual historian; by fleshing out Lewin's engagement with phenomenology, primarily through close textual analysis of his article and its sources alongside discussion of the intellectual contexts in which those sources were originally engaged, I hope to excavate the patterns of influence buried in Lewin's footnotes.[6]

PART I. "WEST COAST" PHENOMENOLOGY AND THE P-MODEL

My claim is that Lewin's brand of phenomenology is dependent upon a particular school of Husserl interpretation, which has come to be known as West Coast phenomenology.[7] Before addressing the central tenets of the West Coast school, I will briefly discuss Lewin's primary sources.

Lewin's understanding of phenomenology relies on two main interlocutors, Izchak Miller and Hubert Dreyfus. Miller's book, *Husserl, Perception, and Temporal Awareness*, is often quoted in Lewin's essay. Yet, this is something of an odd choice. Although Miller taught philosophy at Stanford, MIT, and the University of Pennsylvania, he left a much greater mark on the world of computer programming than that of phenomenology. *Husserl, Perception, and Temporal Awareness* was Miller's only book, and it is one of many exegetical texts available on Husserl's writings on time-consciousness.

The other interlocutor is Hubert Dreyfus, a professor of philosophy at the University of California and an editor of an important collection of essays entitled *Husserl, Intentionality, and Cognitive Science*.[8] Miller has a brief essay in Dreyfus's collection, which summarizes many of the points that would later appear in his own book. It is no accident that Miller's essay appears in the Dreyfus volume, for both are students of the philosopher Dagfinn Føllesdal, who put forth an influential, if not controversial, interpretation of Husserl's epistemology in an essay entitled "Husserl's notion of Noema."[9] Føllesdal's interpretation was adopted by many of his students and colleagues, eventually becoming the central tenet amongst a group of philosophers unofficially known as the "California" or "West Coast" school of phenomenology. Dreyfus's collection not only reprinted Føllesdal's essay—it was the first important collection of writings by the West Coast school.[10]

The core view shared by all West Coast phenomenologists is that they understand Husserl's theory of the noema along Fregean lines. Gottlob Frege, a logician and philosopher one generation older than Husserl, put forth an important theory about linguistic meaning, which was centered on two terms, *Sinn* and *Bedeutung*—which are often translated into English as "sense" and "reference." In his essay "On Sense and Reference," Frege grappled with a puzzle concerning identity statements: is identity "a relation between objects [i.e., referents]? Or between names or signs of objects?"[11] Philosopher Joan Weiner glosses Frege's puzzle as follows: "If identity is a relation between objects then we already know all there is to know about what is identical to what. . . . Any true identity statement is simply a

5 Lochhead (1982); Ihde (1976); Clifton (1983); and Dreyfus and Hall (1982).

6 Naturally, other approaches to Lewin's "Phenomenology" are available. For instance, I make no mention of the relationship between it and his unpublished, but widely circulated, "Morgengruß" manuscript. A separate article could be written on this topic, one which addresses Lewin's intellectual predispositions by showing how many of the themes of the later work, couched in the language of phenomenology or capable of articulation in the language of post-Husserlian phenomenology, are present in the earlier work without any appeal to phenomenology. Additionally, one could address the circumstances surrounding the composition of "Phenomenology," which began as an intervention in the emerging scientific discourse around music perception, in order to emphasize the corrective function of the p-model. Although I hope to pursue these themes in the future, their absence in the present article is pragmatic. My goal is to excavate Lewin's relationship with phenomenology as a heterogeneous tradition and discipline, and to show how the structure of his argument borrows models from within a particular strand of that tradition.

7 Zahavi (2003, 58).

8 Dreyfus and Hall (1982).

9 Føllesdal (1969).

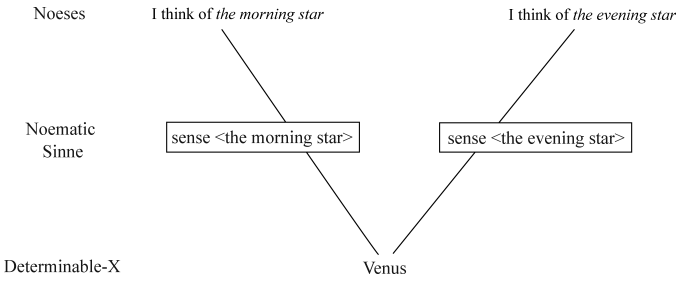
10 The name "West Coast" is fitting because nearly all of its key members resided in California. Although Dreyfus originally studied with Føllesdal at Harvard, by the late 1960s he had taken a position at the University of California at Berkeley. Within a few years, Føllesdal migrated west and began teaching at Stanford. Føllesdal also supervised Izchak Miller's 1980 dissertation, which was eventually reworked into the book cited by Lewin. Other important members of the group are Jaakko Hintikka, a colleague of Føllesdal's at Stanford, who supervised dissertations by Ronald McIntyre and David Woodruff Smith. All of the philosophers mentioned above have essays in Dreyfus and Hall's collection. As an aside, Lewin's and Dreyfus's tenures as Berkeley did not overlap; Dreyfus arrived there in 1968, Lewin having left for SUNY Stonybrook in 1967.

11 Frege (1892, 175).

statement that a particular object is identical to itself and, consequently, obviously true. Yet not all true identity statements are obviously true."[12] Frege approached this problem by demonstrating that a statement's sense and reference are non-identical, since two expressions can refer to the same object but have different senses. For example, take the expressions "the morning star" and "the evening star." Both refer to the planet Venus, but the sense of the expressions differs. If we are only concerned with reference, the sentence "the morning star is the evening star" is simply tautological. No new knowledge is produced. But someone might not know that the morning star and the evening star refer to the same planet, and thus, for that speaker, the sentence would not be tautological but rather informative. The fact that identity statements such as "the evening star is the morning star" are informative helped Frege to overturn the view that identity can be adequately understood as a relation between references alone—a view which he had previously held. Although sense and reference are distinct, a sense acts as a mediator, which links a statement with an object in a particular manner. Frege's findings had great ramifications for developments in the philosophy of language. According to Arthur Sullivan, "[Frege's] argument that we must associate both a sense and a reference with every significant linguistic expression is the paradigm argument for countenancing meanings as distinct from things meant."[13]

According to Føllesdal and the West Coast phenomenologists, Husserl was demonstrably influenced by Frege's thinking in that Husserl also conceives of the relation between an expression and its referent as mediated by a sense.[14] Husserl extended the scope of Frege's theory of linguistic sense by generalizing it to *all intentional acts—linguistic, perceptual, or otherwise.* When Husserl made this generalization he also altered the terminology—eventually settling on the word "noema," from the Greek *nous* (i.e., mind, intellect), to designate this new mental structure.

As an example, we can analyze an intentional experience such as the perceptual experience of walking around a house. We see the house from many perspectives as we walk around it; the object-that-we-are-perceiving remains the same as we circumambulate, but at each moment we see it from a different position. According to Husserl, "Looking at the house itself we focus on the various distinguishing features, and of course we look exclusively at those which really show themselves in this perception itself. But when we express the matter in this way, we are taking it as self-evident that beyond the actual perceptual moments, the perceived house still possesses a multiplicity of other moments not yet grasped."[15] The multiplicity of possible perceptual moments reveals that there is no single position from which I perceive the house in its entirety. Husserl refers to these various partial perspectives of one and the same object as "adumbrations" (*Abschattungen*). Each adumbration is a particular perceptual moment, which possesses unique relations between itself, other moments, and the whole. It affords a distinct sense of the house and thus mediates our experience of one and the same object.



EXAMPLE 1. *Frege's example recast in Husserlian terminology after Smith (2007, 263)*

In everyday activity, little attention is directed toward these shifting adumbrations or toward the various senses that accrue as one is involved in perceptual experience, but the value of phenomenology is that it makes the structure of our intentional experiences explicit. According to David Woodruff Smith, a prominent West Coast phenomenologist, "in phenomenological reflection, we begin to appreciate the structure of the *relation* of intentionality: how an experience is directed toward an object of consciousness through a particular noematic meaning or sense."[16] Notice that Smith's claim takes for granted the generalization from linguistic meaning to intentionality. One could reconstruct the original linguistic basis of Smith's claim by substituting a few terms: "expression" for "experience," and "referent" for "object of consciousness." The resultant sentence glosses Frege's position: "an expression is directed toward a referent through a particular sense." Example 1 recasts Frege's morning star/evening star example into Husserlian terms.

As West Coast phenomenologists, both Miller and Dreyfus subscribe to Føllesdal's Fregean reading of Husserl's noema; they *agree* that the correct interpretation of Husserl's noema is as a mediator, through which intentional experience is directed toward an object of consciousness. However, they *disagree* about the utility of Husserl's project. Miller, a proponent of Husserl, tries to explicate Husserl's theory of time-consciousness in terms of this Fregean reading. Dreyfus, on the other hand, is a critic of Husserl. Although he appreciates certain aspects of the phenomenological project initiated by Husserl, he ultimately critiques Husserl's epistemology for being too disembodied and for getting the phenomena wrong.[17]

12 Weiner (2004, 89).

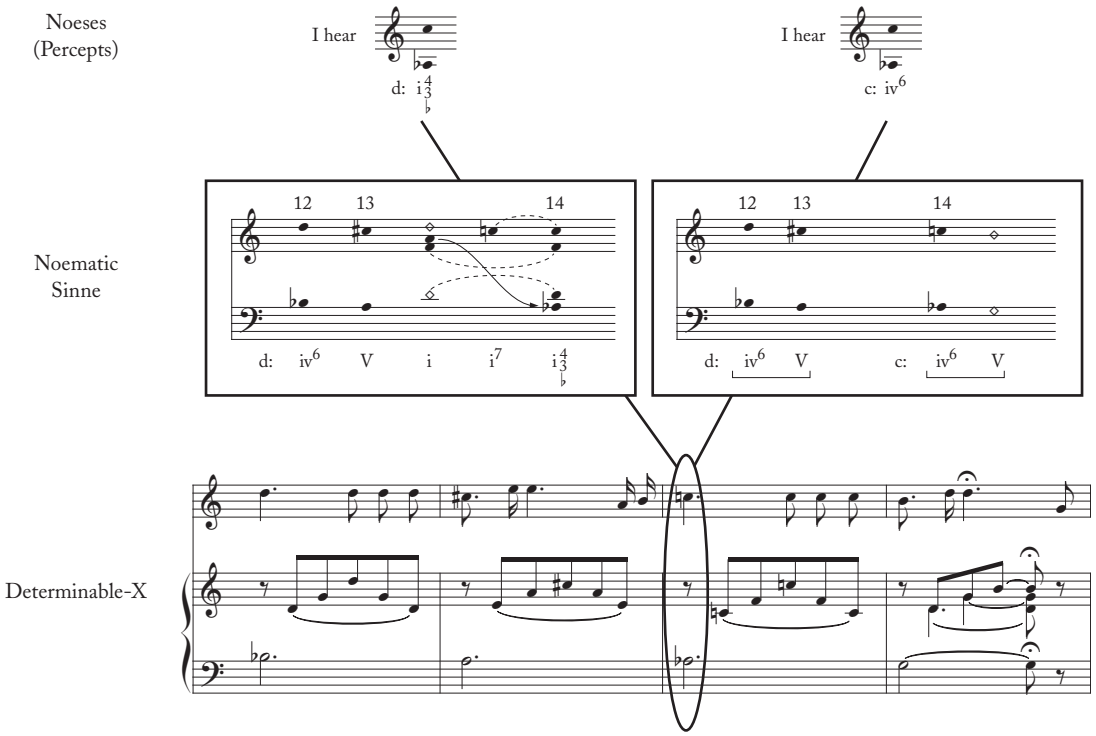
13 Sullivan (2003, 73).

14 As one would expect, the West Coast interpretation of Husserl's relationship to Frege is not universally accepted. For readers interested in the controversy over Frege's influence on Husserl, I recommend the essays and responses by Føllesdal and J. N. Mohanty in Part I of *Husserl, Intentionality, and Cognitive Science*. For an opposing reading of the Husserl-Frege relationship, see Mohanty (2008) and Hill and Rosado Haddock (2000).

15 Husserl (1913, §7, 226).

16 Smith (2007, 260), italics mine.

17 Dreyfus (1972). For an entertaining overview of Dreyfus's critique of Husserl, I refer the reader to Dreyfus's (2005) recorded lectures from the class Philosophy 188: Merleau-Ponty's *Phenomenology of Perception*, especially the lecture of 18 January.



EXAMPLE 2. *Lewin's analysis of "Morgengruß" recast in Husserlian terminology*

Lewin also subscribes to the Fregean reading of Husserl, primarily because his account is so utterly dependent upon Miller's text. I should point out that Miller is something of a stand-in for Husserl throughout Lewin's essay. In fact, every line of Husserl quoted by Lewin is taken from Miller.[18] Moreover, the p-model has a precursor in Miller's text: in Chapter 3, he introduces a notational formalism to model and reformulate Husserl's complicated account of time-consciousness into logically perspicuous relationships of protentions, retentions, and noematic *Sinne*.[19] Lewin, with some drastic revisions, reworks Miller's proto-p-model into the analytical technology used in Parts II and III of his essay.

More significantly, Lewin's p-model depends on the Fregean reading of Husserl because its polemical point requires the distinction between sense and reference. No doubt any reader familiar with Lewin's analysis will recall the moment addressing the clash between two percepts, p6b and p7a, over a harmony that appears in m. 14 of "Morgengruß."[20] The former percept (p6b) hears the harmonies of mm. 12 and 13 *functionally*, as subdominant and dominant in D minor, and treats m. 14 as "a substitute harmony for a d tonic triad." Thus, iv^6 and V in D minor are followed by a tonic substitute—a half-diminished seventh chord in second inversion. The latter percept (p7a) hears the previous two bars sequentially, rather than functionally, and treats m. 14 as the continuation of the sequence: iv^6 and V in D minor is followed by iv^6 and an anticipated V in C minor. For this latter percept, p7a, the harmony of m. 14 is heard as an inverted F-minor triad. Describing the entire situation, Lewin writes,

> The intermodifications of p7a and p6b in this connection involve something like Rameau's *double emploi* brought into our present model. In one perception, p7a, the acoustic signal of measure 14 signifies an "f chord." In another perception, p6b . . . the same stimulus signifies a "d chord". . . . To say these things about the two distinct mental objects (or acts), that is about p7a and p6b, is very different from having to assert that there is one acoustic object, "the chord of measure 14," which "is" both an f chord and a d chord "at the same time."[21]

Aside from the reference to Rameau, Lewin is being quite a "West Coast" phenomenologist here. Each of the individual percepts relates to the "acoustic object"—the "chord of measure 14"—through a different mediating sense. Sense and reference are non-identical for Lewin, as they were for Frege and the West Coast interpretation of Husserl. Lewin maintains this Fregean structure not simply at the level of propositional knowledge—i.e., it is not simply our *language* about music that allows for the chord of measure 14 to have multiple, distinct senses—but this is being generalized to the level of perceptual experience. Since p6b and p7a are different *percepts*, Lewin is claiming that we *hear* the acoustic object differently.

If Lewin's analysis were to be rewritten in more orthodox Husserlian terms, as presented in Example 2, the various

18 From the very first page, on which Miller's summary of Husserl's analysis of a sustained tone is quoted *in extenso*, to the final mention of Husserl's perpetuation of the subject/object split, all citations come directly from Miller.

19 Miller (1984, 55–80 and passim).

20 See Examples 4.7 and 4.8 of Lewin's essay (2006, 68–69).

21 Ibid. (75).

percepts, p6b and p7a, would be described as *noeses,* or acts of consciousness. What each percept *hears*, i.e., the content of the act, has a particular sense due to the context in which it is embedded and to the set of protentions and retentions from which it emerges and toward which it leans. This is what Husserl calls "sense" or noematic *Sinn*. Each of the two *Sinne* presented places the percept in a certain context from which it gets its meaning. Furthermore, the *Sinn* associated with each percept (or noesis) mediates the percept's relation to one and the same referent—what Husserl calls the "determinable-X." Lewin identifies the determinable-X with the acoustic object; clearly, he wants to maintain the difference between noematic *Sinne* and determinable-X, just as Frege wanted to maintain the distinction between sense and reference. Lewin is explicit about this motivation in Part II of his essay, when he introduces the formal argument EV (standing for an "EVent") into the p-model. Lewin writes, "I would not be comfortable with a model that implicitly denied the existence of any 'real event' apart from the various statements [that could be made] about it." He then explicitly links the role of EV in the p-model with "Miller's analysis of Husserl's 'determinable-X,' " quoting a long passage from Miller to make this connection clear.[22]

The force of the p-model depends upon the distinction between the determinable-X and its mediating noematic *Sinne*. In a famous sentence from the essay, Lewin chides us for "our unexamined common habits . . . in using the words 'the' and 'is.' " He claims that "we are already falsely constraining our musical perceptions by implicitly asserting that there is *one* phenomenological object called '*the* harmony of measure 12.' "[23] His argument depends on leveraging the difference between the shifting, variable, potential noematic *Sinne* against the constraining unity of the determinable-X.

PART II. HUBERT DREYFUS, AI, AND THE CRITIQUE OF HUSSERLIAN PHENOMENOLOGY

I began with the claim that Lewin's phenomenology was dependent upon the West Coast interpretation of Husserl. So far, I have argued that the p-model, based on Miller, relies on the West Coast or Fregean interpretation of Husserl in that it assumes the split between sense and reference (or, in Husserl's terms, between noematic *Sinn* and determinable-X). But there is a further aspect of "West Coast" thinking evidenced in Lewin's p-model, namely, the close relationship between the Fregean reading of Husserl and the development of Artificial Intelligence (AI).

Readers of Lewin know that he often employs the language of AI, with its emphasis on modeling mental actions via computer programs to formalize transformations and musical intuitions.[24] Furthermore, biographical evidence shows that Lewin, when he was at Harvard, had some involvement with researchers at MIT working on AI, when it was still closely associated with Cognitive Science and Cognitive Psychology. In fact, Lewin participated in the MIT Seminar on Music, Linguistics, and Aesthetics, in which Lerdahl and Jackendoff's *Generative Theory of Tonal Music* was conceived.

To address the relationship between AI and phenomenology, I turn to Lewin's other primary interlocutor, philosopher Hubert Dreyfus. Dreyfus, a committed post-Husserlian phenomenologist, is a fascinating figure because he was one of Artificial Intelligence's most vehement critics. Dreyfus's critique of AI was sustained over many years: initially presented in his book *What Computers Can't Do*, continuing through a revised and expanded edition of that text, and unfolding into larger questions about the relationship between Husserl and AI in his collection *Husserl, Intentionality, and Cognitive Science*. It is the latter volume that Lewin explicitly cites in footnote 19.[25]

Before presenting an argument about the relevance of Dreyfus's work to Lewin, I will put forth a hypothesis that the structure of Lewin's argument in the phenomenology essay recapitulates the structure of Dreyfus's argument against AI—and this can help to explain the puzzle between Parts I–III and Part V of Lewin's essay. Dreyfus formulates a two-stage argument against AI and, in presenting each stage, as we shall see, the parallels between Dreyfus's and Lewin's positions substantiates this hypothesis.

Stage 1. In the first edition of *What Computers Can't Do*, Dreyfus looked upon the hyperbolic claims of AI researchers with skepticism and argued that AI was not progressing toward the creation of intelligent programs because researchers held incorrect presuppositions concerning the nature of the mind and human intelligence. For AI, intelligence was understood to be a "property of information-processing systems,"[26] which entailed three supporting claims: 1) that intelligence is a form of information-processing that works on discrete and individual units of information; 2) that such units of information are carried by hardware, the causal powers of which are "independent from the entities about which they carry information"[27]—i.e., the hardware itself does not matter so long as its computational power is sufficient; 3) that thinking is the result of building up symbolic representations from these context-free units of information—in other words, thinking is an additive, bottom-up operation.

I will refer to this initial project of Artificial Intelligence as AI1 and note that throughout *What Computers Can't Do*, Marvin Minksy is one of both AI's main proponents and Dreyfus's central targets. Dreyfus argued against the first supporting claim, that intelligence is a form of information-processing on discrete and individual units of information, by

22 Ibid. (60–61).

23 Although Lewin makes this claim about m. 12, the point is intended to be generalized. The same conclusion would hold for m. 14, as Lewin argues (see 2006, 80–81).

24 For example, see Lewin (1987, 118–19). His typographical usage of all capital letters to indicate transformations is also grounded in computer programming and AI.

25 In the original publication of Lewin's essay in *Music Perception*, this is Note 10 (see 1986, 334, Note 10).

26 Andler (2006, 379).

27 Ibid.

relying on an insight about human intelligence originally put forth by Husserl—namely, that intentionality always possesses a horizon, which means that it is always in the midst of expectations which are generated from the context. Reflecting on his critique, Dreyfus writes,

> In 1972 . . . I pointed out that it was a major weakness of AI that no programs made use of expectations. . . . Instead of modeling intelligence as a passive receiving of context-free facts into a structure of already-stored data, Husserl thinks of intelligence as a context-determined, goal-directed activity—as a *search* for anticipated facts. For him the noema . . . provides a context or "inner horizon" of expectations or "predelineations" for structuring the incoming data. . . .[28]

In other words, there is no context-free fact. The noema acts as a mediator for perceptual acquaintance with an object. It provides that object a sense, which changes depending on the context and usage. AI overlooks the role of the noema when it models intelligence as the symbolic manipulation of context-free bits of information.

Lewin makes a parallel argument: As music theorists, we support the view that intelligence is a passive reception of context-free facts when we indulge in our penchant for the "Euclidean/Cartesian score-plane" leading to "the fallacious idea that there is one unique object called 'the B flat of measure 12' . . ." or the harmony of measure 14.[29] The corrective point of the p-model is to counteract this habit of thought, to encourage music theorists to recognize and model musical perceptions as context-determined and goal-directed. The p-model is deployed in order to capture the influence of musical protentions and retentions, which shape the meaning of individual percepts. Hearing mm. 12–13 of "Morgengruß" as a sequence or, alternatively, as a functional progression leads toward two different sets of expectations about "the" harmony of m. 14. There is no context-free fact. Both Dreyfus and Lewin argue this point by including expectation and memory—what Husserl calls "horizons"—as, respectively, an essential part of any theory of human intelligence or musical perception.

Stage 2. In the second edition of *What Computers Can't Do*, and repeated in the introduction to *Husserl, Intentionality, and Cognitive Science*, Dreyfus claims that his initial critique influenced changes in the paradigm of AI. He writes, "In 1973 Marvin Minsky proposed a new data structure, remarkably similar to Husserl's, for representing everyday knowledge."[30] Minsky's introduction of frames into Artificial Intelligence changed the paradigm of AI from the context-free processing of facts into a top-down structure that tried to fill in holistic yet indeterminate components by the anticipation of context-determined facts. I will call this a change from AI1 to AI2.

Lewin was aware of the relationship between Minksy, AI2, and phenomenology. In Part I he asserts that "Marvin Minsky—like myself I suppose—is not popularly considered a phenomenologically oriented thinker. And yet the following quotation would find itself very much at home in Husserl's *Time-Consciousness*: 'to really understand how memory and process merge in "listening" we will simply have to use much more "procedural" descriptions—that is, the kinds that can describe *how processes proceed.*'" Only someone who had read Dreyfus—and possessed familiarity with the argument about Husserl, horizontality, frames, and AI—would make this statement. A few pages later, Lewin makes the relationship much more explicit. In order to capture some of the "recursive [i.e., horizonal] aspects of musical perception-structure," he offers a preliminary version of the p-model in the language of Artificial Intelligence. He writes, "By casting my discourse into symbolic computer language of this sort, I mean to suggest the possible utility of Artificial Intelligence (actor language, frames, et al.) in studying these matters. Thereby I mean specifically to make points of contact with Minsky, and with certain features of Miller's presentation as well."[31] Footnote 19, which Lewin appended to this sentence, references the pages of Dreyfus to which I referred in the previous paragraph.

AI2 makes improvements over AI1 in that it tries to model some temporal aspects of intelligence, such as anticipation, expectation, denial, and so forth. Miller's book on Husserl treats precisely these aspects of Husserl's thinking—recall, it is a book on time-consciousness—but does so using formal models (like the proto-p-model) that were easily adaptable by AI researchers. Miller's book helped to forge ties between the research paradigm of AI2 and Husserlian phenomenology. It is no coincidence that Lewin can base his own p-model on Miller's formalism *and* construe the p-model in terms of computer programming languages.[32]

It is at this point that Miller and Dreyfus diverge. Although AI2 is an improvement, Dreyfus argues that it still fails to model human intelligence adequately. Even with the change from context-free units of information to context-determined frames, AI2 presupposes that those units of information are carried by hardware the causal powers of which are independent from entities about which they carry information.[33] In other words, for AI2, the hardware does not matter—brains

28 Dreyfus (1979, 34), italics in the original. Dreyfus and Hall (1982, 18) reprints this critique in a passage explicitly referenced by Lewin (2006, 58, Note 19).

29 Lewin (2006, 81).

30 Dreyfus (1979, 35), reprinted in the introduction to Dreyfus and Hall (1982, 19).

31 Lewin (2006, 55, 58).

32 In fact, this is one of the legacies of the p-model. Smoliar (1990) suggests a strategy for actually programming Lewin's p-model using Minsky's system of agents presented in *Society of Mind*. What is particularly fascinating about Smoliar's work is that he must eventually revise the p-model radically because of the lack of systematicity he encounters in the STatements made in Language L, what Smoliar calls Lewin's "*ad hoc* approach to supporting terminology" (Smoliar [1990, 9]).

33 Andler (2006, 379).

are no different from CPUs. Thus, AI2 neglects one of Dreyfus's central criticisms; by splitting the hardware from the information processing, AI2 perpetuates a metaphysical distinction between the body and the mind, wherein "mind" is construed as something causally independent of the hardware upon which it operates. For Dreyfus, this mind/body split is intolerable, not simply on metaphysical grounds, but because it supports a view of intelligence which is disembodied. Dreyfus confronts AI2 with a number of arguments from Merleau-Ponty and the early Heidegger, to demonstrate how embodied action organizes intelligence by coordinating behavior and disclosing a world that possesses a particularly human structure and horizon.

In this regard, Husserl and AI2 both presuppose a rift between the body and the mind. According to philosopher Taylor Carman, "[Husserl] takes it for granted that cognitive attitudes, rather than bodily skills, must bridge the intentional gap between mind and world." Merleau-Ponty's philosophy challenges the view that the mind can be adequately understood on cognitive terms alone, by founding his phenomenological project on the notion of bodily intentionality. As Carman suggests, Merleau-Ponty tried to overturn the philosophical prejudice of a Cartesian mind/body dualism, without denying the existence of mental experience, by insisting that "thought and sensation as such occur only against a background of perceptual activity that we always already understand in bodily terms, by engaging in it."[34] In a thematic statement, Merleau-Ponty writes, ". . . the distinction between subject and object is blurred in my body (and no doubt the distinction between noesis and noema as well?). . . ."[35]

Dreyfus follows this line of thinking when he critiques AI2 in his introduction to *Husserl, Intentionality, and Cognitive Science*; Lewin quotes this passage in his footnotes. Dreyfus adjusts Merleau-Ponty's terminology, preferring to speak about "skills" and "coping" rather than "bodily intentionality." Dreyfus writes,

> . . . there are other ways of "encountering" objects than relating to them as objects of perception or predication [as Husserl does]. When we use a piece of equipment like a hammer, Heidegger claims, we actualize a bodily skill (which cannot be represented in the mind) in the context of a socially organized nexus of equipment, purposes, and human roles (which cannot be represented as a set of facts). This context and our everyday ways of skillful coping in it are not something we *know* but, as part of our socialization, form the way that we *are*.[36]

The sentiment of this passage resonates with Lewin's convictions, especially the claim that "there are other ways of 'encountering' objects than relating to them as objects of perception or predication." In Part V of the phenomenology essay and elsewhere, Lewin continually emphasizes the interconnectedness between the acquisition of skills and the development of our musical capacities. A notable example comes from his Stockhausen essay in *Musical Form and Transformation*, in which he provides an "ear-training aid" for hearing the transformations posited in his analysis.[37] Or, consider his "Eroica" example from the "phenomenology" essay: couched in the midst of a discussion of ConteXT as a formal component in the p-model, Lewin argues that two nearly indistinguishable chords from the "Eroica"—the E♭-major chords of mm. 1 and 690—when isolated from the musical context, could still be potentially differentiated due to their slightly different orchestrations. Although the difference is almost indiscernible, Lewin writes,

> You will nevertheless admit that a musician with an excellent ear and a thorough knowledge of the piece could "in theory" locate the chord. You will further admit that a student in an advanced conducting class, or an advanced orchestration class, might reasonably be asked to hear such subtle differences between sounds as are at issue here. . . .[38]

One could imagine coming up with ear-training aids, like those of the Stockhausen essay, to help the advanced student make such differences audible and perspicuous. The challenge of distinguishing these two nearly indiscernible chords becomes soluble when placed into a context that is not simply perceptual, but involves the training and acquisition of skills by some embodied human subject. This same sentiment is also asserted in a statement qualifying Lerdahl and Jackendoff's claim that "Composers and performers must be active listeners as well."[39] Lewin emphasizes the gradual development and training of our musical skills and perceptual capacities by claiming that "Composers and performers will normally *have done* a great deal of expert and active listening, *before* attaining a state of concentrated readiness in which any specific new creative act can transpire."[40]

Through emphasis on the role of training and skill acquisition, Lewin is encouraging music theorists to consider other ways, besides perception straight and narrow, in which we encounter musical entities. We are being "goaded" to think of perception no longer in isolation from behavior, action, and performance. Lewin makes this explicit: he dislikes the way that music departments separate "competence," "performing," and "understanding"—three terms that are linked together in acts of skillful coping.[41]

* * *

I began Part II of this essay with the hypothesis that the structure of Lewin's argument in the phenomenology essay recapitulates the structure of Dreyfus's argument against AI. In order to

34 Carman (1999, 206).
35 Merleau-Ponty (1960, 167).
36 Dreyfus (1982, 20–21).
37 Lewin (1993, 42).
38 Lewin (2006, 63).
39 Lerdahl and Jackendoff (1983, 7).
40 Lewin (2006, 99), italics in the original.
41 Ibid. (97).

make the parallelism explicit, one could summarize Dreyfus's two-stage argument as follows:

> (1) Although the incorporation of Minksy's frames helped AI to overcome the fallacious model of intelligence promoted by context-free units of information, (2) AI still fails to situate intelligence within the context of bodily intentionality and skillful coping.

And similarly, for Lewin:

> (1) Although the incorporation of the p-model helps music theory to overcome the fallacious model of musical perceptions promoted by the Cartesian score-plane, (2) music theory still fails to situate musical perceptions within the context of bodily intentionality and skillful coping.

To be utterly synoptic, even to the point of ridiculousness, one could categorize this as a "close-but-no-cigar" argument. Or, with a bit more sublimity, one might prefer to call it a Mosaic argument: "It will not get you all the way to the promised land." For Dreyfus, the incorporation of expectations and frames into models of Artificial Intelligence will get you closer to modeling human intelligence but will not get you into the promised land of intelligent machines. For Lewin, the addition of the p-model as a music theoretical technology will help you get closer to modeling the "recursive" aspects of perceptual experience, but it will not get you into the promised land of a music theory that models the perpetual link between perception and creation—closer, but still no cigar.

Before closing, one further question remains. I have presented evidence in support of my argument that Lewin's phenomenology is dependent upon the West Coast school, in particular Izchak Miller's treatment of Husserl on time-consciousness and Hubert Dreyfus's criticism of Husserl and AI *vis-à-vis* post-Husserlian phenomenology. Yet Lewin does not couch his criticisms of the p-model *in terms of phenomenology*, i.e., he never makes the move from a Husserlian-influenced perceptual model to an explicitly post-Husserlian model of skillful coping. In fact, there are few statements by Lewin, other than those in an expansive and polemical mode, which explain how music theory can enter the promised land of endless recursive links between perception and creation.

How, then, should one continue to pursue the relationship of phenomenology and music theory in the light of Lewin's project?

I see two possibilities. On the one hand, a close reader of Lewin could study the various iconic statements concerning embodiment littered throughout his body of work—claims like "[The transformational] attitude is by and large the attitude of someone *inside* the music, as idealized dancer and/or singer,"[42] or "Riemann . . . never quite worked through in his own mind the *transformational* character of his theories. He did not quite ever realize that he was conceiving 'dominant' . . . as something one *does* to a Klang . . . "[43]—and attempt to reconcile these claims with the more formalized analytical technologies that Lewin deploys. In other words, one would isolate in Lewin's work a tension between Husserlian and post-Husserlian schools of thought and try to sort out some coherent phenomenological theory that adequately secures the greatest amount of territory.

Steven Rings develops this strategy in Chapter 2 of his dissertation. Rings observes that many theorists have found Lewin's ideas about the embodied, transformational attitude attractive, yet the meaning of this attitude remains elusive. "What exactly is the nature of the musical 'doing' that the transformational attitude seeks to capture? And how does this analytical 'doing' square with the real-world 'doing' we are involved in when we perform or listen to music?"[44] Rings's strategy is to "disambiguate" the issues by separating the transformational attitude into two classes of actions: physical (or concrete) actions versus mental (or intentional) actions.[45] For Rings, the concrete interpretation of the transformational attitude ultimately fails to ground a coherent understanding of Lewin's analytical claims. This failure then motivates Rings's explicitly Husserlian-influenced theory of tonal intention; he converts the literal, bodily implications of these iconic Lewinian statements into "metaphors" or "mental performances," which can be easily reconciled with a disembodied, Husserlian intentionality. The latter is touted as the appropriate phenomenological system for understanding transformational theory, generally.[46]

This is not intended as a criticism of Rings's work. Simply put, if Dreyfus was as influential on Lewin as my argument suggests, then there would be grounds for arguing that Husserlian intentionality was not the direction in which Lewin's phenomenological thinking was headed.[47] At the same time, Rings's thought acutely acknowledges a residual problem in Lewin's writing, namely, that the relationship between Husserlian and post-Husserlian phenomenology remains undeveloped. Indeed, a Husserlian framework may accommodate many aspects of Lewin's analytical claims and technologies better than various post-Husserlian frameworks. But there is evidence to suggest that Lewin's commitments point in a direction away from Husserlian intentionality, toward post-Husserlian embodiment.

On the other hand, one could try to develop these commitments in terms of post-Husserlian phenomenology. If Lewin had greater familiarity with this work, perhaps he would have fleshed out his critique of perceptual theories in post-Husserlian terms rather than reformulating it in the literary-critical

42 Lewin (1987, 159), italics in the original.

43 Ibid. (177), italics in the original.

44 Rings (2006, 46).

45 Note that the *a priori* division of actions into concrete versus intentional already assumes a body/mind split that post-Husserlian phenomenology would find disputable.

46 Rings (2006, 55 and 60ff.)

47 Further development of this claim would necessitate a wider study of Lewin's thinking than that presented here. For such a study my chosen method of intellectual history and close reading of the "Phenomenology" text would have to be supplemented by other methods of inquiry.

terms of Harold Bloom or Marjorie Perloff.[48] Perhaps Lewin felt more comfortable making his polemical points in the language of literary criticism, or perhaps he found the jargon, politics, and polemics of post-Husserlian thinking distasteful—one can only speculate. But regardless of the terms that Lewin appropriates, clearly the possibility remains open for one to pursue the *themes* introduced in Part V of the essay through an application of post-Husserlian phenomenology, in particular, through a close study of Merleau-Ponty.

Generally, one may have doubts about the viability of Lewinian embodiment,[49] but, whatever the final conclusions about this concept, I would hope that further, closer study of Lewin's phenomenological sources would act as, itself, a "goad to action." As regards music theory and phenomenology, Lewin's essay is not the end of the story, but rather the beginning.

48 As an aside, I have always found Lewin's "post-Bloomian" talk to be, frankly, embarrassing. Lewin de-psychologizes Bloom to the point of utter unrecognizability; the poet's tragic psychic struggle for recognition is exchanged for a promissory note on a new poetics in which perception and action run through the daisies hand in hand. Moreover, a Bloomian hermeneutic could be turned around to interpret traces of the anxiety of influence in Lewin's own writings. In particular, a Bloomian reader might identify two moments of anxiety that center on Hubert Dreyfus, both appearing in Note 19 (Lewin [2006, 58]).

1. The note begins with a gesture of *kenosis*—an act of emptying out or humbling oneself before the precursor—as Lewin states that his connection between the p-model and AI is "not particularly new or original." Yet, like any act of *kenosis*, the self-abasement is performed in order to deflate the precursor as well. The footnote continues, "Points of contact between Husserl's phenomenology and the worlds of Artificial Intelligence are the primary subject, *for instance,* of a recent publication edited by H. L. Dreyfus and H. Hall, *Husserl, Intentionality, and Cognitive Science* . . . " (italics added). The astute reader will note that this sentence is written *as if* there were multiple sources one could have consulted, when in fact this claim is developed specifically, and most forcefully, in Dreyfus's work.

2. Following this statement, a notable lapse appears in Lewin's description of Dreyfus's introduction to the collection. Lewin mentions two sections of Dreyfus's text, "Husserl's Anticipation of Artificial Intelligence" and "Husserl's (and AI's) Problems," which are precisely the headings under which Dreyfus presents his two-stage argument against AI. According to Lewin, "the *former* section characterizes Minsky's frame construct of 1973 as 'a new data structure remarkably similar to Husserl's for representing everyday knowledge . . . ,' " and then goes on to cite other work in the area which addresses AI and the recursive aspects of perception, such as studies by Otto Laske (Ibid.). Although Lewin's use of the phrase "the former" primes the reader to follow the transition from Husserl's anticipations to Husserl's problems, Lewin neglects to discuss "the latter." A suspicious reader might interpret this lapse as a moment of anxiety, for the latter section summarizes Dreyfus's critique of AI and, *mutatis mutandis*, acts as the model for Lewin's argument in Part V. I have tried to demonstrate the substantive and formal centrality of that critique for Lewin's essay.

49 I must underscore that I have remained firmly agnostic on *that* question. Methodologically, I have tried to remain focused on intellectual history and textual analysis.

WORKS CITED

Andler, Daniel. 2006. "Phenomenology in Artificial Intelligence and Cognitive Science." In *A Companion to Phenomenology and Existentialism*. Ed. Hubert L. Dreyfus and Mark A. Wrathall. 377–93. London: Blackwell Publishing.

Bloom, Harold. 1973. *The Anxiety of Influence: A Theory of Poetry*. New York: Oxford University Press.

Carman, Taylor. 1999. "The Body in Husserl and Merleau-Ponty." *Philosophical Topics* 27 (2): 205–26.

Clifton, Thomas. 1983. *Music as Heard: A Study in Applied Phenomenology*. New Haven: Yale University Press.

Cook, Nicholas. 1983. Review of *Music as Heard: A Study in Applied Phenomenology* by Thomas Clifton. *Music Analysis* 2 (3): 291–94.

Dreyfus, Hubert L. 1972. *What Computers Can't Do: A Critique of Artificial Reason*. New York: Harper and Row.

———. 1979. *What Computers Can't Do: The Limits of Artificial Intelligence.* New York: Harper and Row.

———. 1992. *What Computers Still Can't Do: A Critique of Artificial Reason*. Cambridge [MA]: The MIT Press.

———. 2005. Recorded lectures from Philosophy 188: Merleau Ponty's *Phenomenology of Perception*. http://socrates.berkeley.edu/~hdreyfus/188_s05/html/Lectures.html (accessed 14 December 2009).

Dreyfus, Hubert L., and Harrison Hall, eds. 1982. *Husserl, Intentionality, and Cognitive Science*. Cambridge [MA]: The MIT Press.

Føllesdal, Dagfinn. 1969. "Husserl's Notion of the Noema." *The Journal of Philosophy* 66 (21): 680–87. Repr. in Dreyfus and Hall, eds., 1982.

Frege, Gottlob. [1892] 2003. "On Sense and Reference." Trans. Max Black. In *Logicism and the Philosophy of Language: Selections from Frege and Russell*. Ed. Arthur Sullivan. 175–92. Orchard Park [NY]: Broadview Press.

Heidegger, Martin. [1927] 1962. *Being and Time*. Trans. John Macquarrie and Edward Robinson. Malden: Blackwell Publishing.

Hill, Claire Ortiz, and Guillermo E. Rosado Haddock. 2000. *Husserl or Frege?: Meaning, Objectivity, and Mathematics.* Chicago: Open Court.

Husserl, Edmund. [1913] 1982. *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy, Book I*. Trans. F. Kersten. The Hague: M. Nijhoff Publishers.

———. [1928] 1997. "Amsterdam Lectures [on] Phenomenological Psychology." In *Psychological and Transcendental Phenomenology and the Confrontation with Heidegger (1927–1931)*. Ed. and trans. Thomas Sheehan and Richard E. Palmer. 199–253. Dordrecht: Kluwer Academic Publishers.

Ihde, Don. 1976. *Listening and Voice: A Phenomenology of Sound*. Athens: The Ohio University Press.

Lerdahl, Fred, and Ray Jackendoff. 1983. *A Generative Theory of Tonal Music*. Cambridge [MA]: The MIT Press.

Lewin, David. 2006. "Music Theory, Phenomenology, and Modes of Perception." In *Studies in Music with Text*. 53–108.

New York: Oxford University Press. Originally published in *Music Perception* 3 (4): 327–92, 1986.
———. 1987. *Generalized Musical Intervals and Transformations*. New Haven: Yale University Press.
———. 1993. *Musical Form and Transformation: Four Analytic Essays*. New Haven: Yale University Press.
Lochhead, Judith. 1982. "The Temporal Structure of Recent Music: A Phenomenological Investigation." Ph.D. diss., State University of New York at Stony Brook.
Merleau-Ponty, Maurice. [1945] 1962. *Phenomenology of Perception*. Trans. Colin Smith. London: Routledge and Kegan Paul.
———. [1960] 1964. "The Philosopher and His Shadow." In *Signs*. Trans. Richard C. McCleary. 159-81. Evanston: Northwestern University Press.
Miller, Izchak. 1984. *Husserl, Perception, and Temporal Awareness*. Cambridge [MA]: The MIT Press.
Mohanty, J[itendra] N[ath]. 2008. *The Philosophy of Edmund Husserl: A Historical Development*. New Haven: Yale University Press.
Perloff, Marjorie. 1984. "Postmodernism and the Impasse of the Lyric." *Formations* 1 (2): 43–63. Repr. in Perloff. 1985. *The Dance of the Intellect: Studies in the Poetry of the Pound Tradition*. 172–200. Cambridge: Cambridge University Press.
Rings, Steven. 2006. "Tonality and Transformation." Ph.D. diss., Yale University.
Smith, David Woodruff. 2007. *Husserl*. New York: Routledge.
Smoliar, Stephen W. 1990. "Lewin's Model of Musical Perception Reflected by Artificial Intelligence." *Computers in Music Research* 2: 1–37.
Sullivan, Arthur. 2003. Introduction to *Logicism and the Philosophy of Language: Selections from Frege and Russell*. Ed. Arthur Sullivan. 15–90. Orchard Park [NY]: Broadview Press.
Weiner, Joan. 2004. *Frege Explained: From Arithmetic to Analytic Philosophy*. Chicago: Open Court.
Zahavi, Dan. 2003. *Husserl's Phenomenology*. Stanford: Stanford University Press.

Music Theory Spectrum, Vol. 33, Issue 1, pp. 27–36, ISSN 0195-6167, electronic ISSN 1533-8339. DOI: 10.1525/mts.2011.33.1.27