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"Adrift on Neurath's Boat": The Case for a Naturalized Music Theory

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ABSTRACT: This paper draws on the work of Neurath and Quine to shed light on recent debates between music theory and New Musicology. Although it accepts many of New Musicologist's criticisms of traditional music theory, the paper nonetheless defends the use of empirical methods and even supports the trend towards naturalizing music theory.

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[1] Some of you may be wondering who the hell Neurath is and what on earth his boat has to do with music theory. Let me assure you that there is method to my madness and that the connections will become clear as the paper unfolds. For the record, Neurath was a philosopher who helped found the Vienna Circle in the 1920s. He wrote papers on sociology, politics, and education. It was in one of these essays that he used the metaphor of a leaking boat to explain how people acquired their knowledge of the outside world.(1) In recent years Neurath's boat has become associated with an even more famous philosopher, the celebrated American logician Willard Van Orman Quine.(2) My goal is to use Quine's version of this metaphor to shed light on recent debates between music theory and New Musicology. Obviously, to understand the relevance of Neurath's boat it is important to determine what the current debate is really about. This, however, is no simple task because the discussion covers a wide range of topics and viewpoints. At the very least, it raises questions of ideology and scope—that is, of deciding what the purpose of music theory should be and what aspects of music should be studied. But it also raises questions about how music theory should be conducted, and it is these epistemological or methodological issues that I will focus on. To keep things as simple as possible, I have written a short fairy tale.(3) It's a story with a happy ending for theorists, but one that makes big concessions to New Musicology. Although the characters are all fictional, they are composite sketches drawn from a wide range of authors. Some of these sources can be found in the notes. Well, if you are sitting comfortably, then I'll begin.

[2] Not such a long time ago in a galaxy not far from our own, there lived a staid music theorist, or SMT for short. He was an earnest fellow who eked out a meager existence with his two trusty droids, ArtusiDeetusi and 3ZPo. SMT cared a lot about music and tried to find nice, tidy ways to understand specific pieces. Every day he took out his scores and pried them apart to find some underlying structures. SMT tried to satisfy three constraints of objectivity, truth, and autonomy.(4) He checked that he had objectively separated the method being used from the observations being made, and was confident that other analysts would come up with similar results if they used the same methods on the same pieces. SMT believed his

results were true because they fit the facts and autonomous because they weren't contaminated by stuff that wasn't in the notes on the page. By comparing different analyses he searched for an optimum reading. Deep down, SMT knew that there were probably other ways to look at music, but this one paid the bills—well, sort of.

[3] Anyway, one day, SMT heard a knock at his door. When he opened it, he saw before him a slick new musicologist, or SNM for short. Fed up with authenticating, dating, and editing scores, SNM wanted to analyze them as well and had come to see what SMT was up to. When SNM saw those nice, tidy methods, he called SMT nasty names—positivist, objectivist, and modernist![(5)] Instead of agonizing over every note in every measure, SNM wanted to look at music in wider terms. He wanted to include all the stuff that wasn't in the notes on the page. His motto was "the more the merrier and the messier, the better."[(6)] He chuckled at the idea of an objective analysis. He knew better; he knew that analyses are always theory laden.[(7)] SNM was also skeptical that analyses could ever be true; he thought that they were at best provisional and depended on the analyst's theoretical preconceptions.[(8)] And SNM wasn't impressed that SMT treated scores autonomously; for him they can only be understood within some cultural, intertextual, or subjective context.[(9)]

[4] For a while SMT and SNM dismissed their disagreements as simple Turf Wars. But things changed when SNM started to lash out at SMT. SNM took the idea that analyses are theory-laden and inferred that the main features of an analysis come not from the piece, but from the listener's head.[(10)] SNM claimed that analyses are ventriloquistic acts in which analysts manipulate the piece to suit their own purposes.[(11)] He also decided that, since analyses are provisional and incomplete, they must necessarily be misreadings.[(12)] The analyst's task was to evaluate the relative strength of the misreading.[(13)]Having given up the quest for definitive analyses, SNM wanted many readings.[(14)] He didn't care if they were true or bound by causal laws, just that they were illuminating and entertaining.[(15)] One by one, SNM replaced objectivity with subjectivity, truth with relativism, and autonomy with contextualism. The crowd loved it, especially when he suggested that his new methods demanded not less, but more rigor.[(16)]

[5] "Rigor mortis, more like!" thought SMT. He didn't think that empirical methods were as bad as all that, and was reluctant to abandon objectivity, truth, and autonomy altogether. SMT was also worried by some of SNM's more extreme positions. To begin with, although SMT agreed that analysis are always theory-laden, he didn't think that there were no pieces without a listener. He came up with a simple counter-example.[(17)] Imagine two piano sonatas by Beethoven. Although SNM is free to create whatever readings he liked, no one would expect him to produce the same analysis for both pieces. Why? Because the music is different, and not just because SNM produced his analyses on different days or from different contexts. At some level the physical differences between each piece must constrain SNM's thinking. Similarly, when SNM spoke of the relative strength of a misreading, or an illuminating analogy, as compared to what? A misreading can only be a misreading if it is measured against some standard and an analogy can only be illuminating if it clarifies something that was previously obscure. The moral is that it is one thing to claim that all observation is theory-laden and quite another to claim that we can never find observations that are neutral with respect to the theory or analysis being tested.[(18)] Indeed, scientists regularly perform such checks and balances; these control experiments ensure that the results can be repeated by a community of fellow inquirers. Such intersubjective corroboration keeps the individual in touch with reality.[(19)]

[6] Next, SMT conceded that his analyses were provisional and incomplete, but denied that they were just misreadings. He noted that the snag with empirical arguments is not so much that they are true or false, as that they always fall short of certainty. This much was discussed by Hume in the eighteenth century and was expanded more recently by Hempel and Goodman.[(20)] SMT recalled a chat he overheard between a physicist and a layman about flying saucers. The physicist insisted that they do not exist. But, when the layman asked him to prove it, he could not. The physicist admitted that he could only say "what is more likely or what is less likely," and not prove once and for all what is possible and impossible.[(21)] The story underscored an important point: it is one thing to ask what makes a given analysis true, and quite another to ask how we know whether it is justified. Empiricism does the latter not the former; its arguments gain force insofar as they predict future events and are falsified when they make bad predictions.[(22)]

[7] Finally, while SMT realized that he could never explain pieces autonomously, he was not convinced that cultural, intertextual, or subjective knowledge was any more relevant or reliable than other sorts of knowledge. SNM was right to insist that we always encounter music in a cultural context, but SMT knew our understanding of that music is shaped by

other factors as well. At some point, for example, our basic biological and cognitive capacities must come into play.[23] Furthermore, it wasn't obvious to SMT that cultural, intertextual, and subjective knowledge is really so different from other types of knowledge.[24] After all, SNM invoked facts about culture, politics, society, gender, and so forth.[25] But how did he know they were facts and how did he know which of the many possible facts to use? Surely he did so using the same empirical methods as SMT. His facts were no less certain and no less theory-laden. And although SNM assumed that we know ourselves better than we know the external world, SMT wasn't so sure.[26] Psychologists had convinced him just how fallible self- knowledge and introspection can be.[27] And philosophers such as Wittgenstein had shown that the first-person perspective is not the best starting point for philosophy, still less as the foundation for any theory of knowledge.[28] Now SMT did not deny that cultural, intertextual, or subjective knowledge was relevant to musical analysis; he simply saw no a priori reason to privilege it. This is because relevancy and reliability are epistemic rather than cultural, intertextual, or subjective issues. This point was perfectly evident in recent discussions of the so-called frame problem.[29]

[8] SMT was left in a quandary. How could he accept SNM's criticisms yet hold onto the notions of objectivity, truth, and autonomy? At first, SMT was unsure about what to do, but he soon felt a strange force inside and became empowered to strike back. He grabbed the phone. He thought he'd called the psychic hot-line, but realized what his mistake when a voice asked him if he wanted "a five-minute argument, or the full half hour?"[30] SMT went for the latter.

[9] The argument clinic wasn't what he expected and it wasn't located in a swamp somewhere in the Dagobah system. The secretary introduced him to an amiable but austere man named Obi Van Quinobi. Although SMT wasn't used to explaining theories and things from a logical point of view, he described his debate with SNM. He spoke of objectivity, truth, and autonomy, and even pulled out a graph of *Gurrelieder* that he happened to have lying around. After listening carefully Obi Van said he had bad news and good news. He said that if SMT really was a positivist, then he had better change his tune. Positivism was dead. His criticisms sounded a lot like SNM's. Obi Van refused to draw a line between theory and observation and suggested that "theoretical sentences grade off to observation sentences."[31] Obi Van agreed with SNM that what we take to be true depends on our theoretical outlook.[32] Nothing he claimed, was immune to revision and, since all analyses are underdetermined by the data, a single piece can yield indefinitely many readings.[33] And, like SNM, Obi Van rejected any idea of understanding pieces autonomously; he insisted that "our statements about the external world face a tribunal of sense experience not individually but only as a corporate body."[34]

[10] So much for the bad news, what about the good news? Obi Van said although positivism may be sunk, empiricism could still be salvaged. He recounted a story told to him in the olden days. According to the story, empiricists resemble sailors at sea on a leaking boat. Instead of rebuilding their boat from the keel up in a dry dock, they fix the leaks while adrift on the open water. As each plank is replaced, the remaining timbers keep the craft afloat. But once one leak is patched another appears; bit by bit the boat becomes transformed, being carried along by nothing but the evolving conceptual scheme itself.[35] In other words, empirical research is always open ended. Researchers do not begin with a blank slate, they do not have fool proof methods, and they do not reach definitive solutions. Instead, they plunge *in medias res*. They must tentatively believe all of their inherited world view, but they must also realize that some unidentified portions are wrong.[36] They must improve, clarify, and understand by trading off evidence with system: too much evidence creates a mere record of observations; too much system creates a myth without foundation.[37] By focusing on the way in which the empiricist justifies his beliefs, epistemology grades off with psychology, thereby naturalizing the former.[38]

[11] Obi Van said that Neurath's boat did not commit him to the inferences made by SNM. Although Obi Van blurred the line between theory and observation, he still believed that there are objective physical facts which root our beliefs in reality.[39] This meant that the boat was a real boat and the leaks were real leaks. Obi Van also said that while he rejected empiricism as a theory of truth, he accepted it as a theory of evidence.[40] Although empiricism never gives us absolute truth, it can give us results that cover existing answers, make accurate predictions of future events, and are repeatable by other researchers. This was a direct contrast to SNM. Finally, Obi Van recognized that our beliefs about the world do not arise autonomously, but in a complex web that touches reality only at the edges.[41] But he didn't believe that cultural, intertextual, or subjective data were the only elements of the web.[42] For him the web encompassed the complete range of empirical knowledge, or at least big chunks of it.[43]

[12] Well, I'd like to say that SMT went home, won a MacArthur Fellowship, and lived happily ever after. But I can't. Alas, it's not clear how we should interpret Obi Van's words and objections. What we need is a reality check. In the remainder of this paper I want to spell out what a naturalized music theory looks like in general and what specific applications it may foster.

[13] Although there are many ways to naturalize music theory, they usually involve two things: 1) rejecting any foundationalist set of standards for evaluating theories and analyses; and 2) seeking law-like connections between so-called aesthetic and non-aesthetic properties.(44) In the first case, naturalized music theory suggests that the issue of evaluating theories and analyses is closely entwined with the matter of empiric demonstration. It puts a premium on the idea that music theories and analyses should be judged according to their empiric adequacy—that is, whether they fit the physical facts—and their predictive power—that is, whether they predict how particular musical relationships will occur in future instances. In other words, it accepts the possibility of constructing law-like generalizations about musical phenomena and the emotional states that create, and that these generalizations can be confirmed by other people.(45) In the second case, by seeking law-like connections between aesthetic and non-aesthetic properties, naturalized music theory blurs the distinction between music theory, psycho-acoustics, cognitive psychology, and neuro-biology. By focusing on how people come to understand and respond to music, it places the knowing subject back into the discussion, yet it does so, not in an solipsistic sense, but in the sense that private views can be confirmed intersubjectively by empiric tests.(46)

[14] To show the impact that naturalizing might have on music theory, let me offer a single example. One area in which music theory and New Musicology have interacted has been is over the question of influence; one of the best-known ways to explain it is Harold Bloom's so-called Anxiety Theory of poetic influence.(47) For Bloom, influence often involves a violent response to the past and the people who shaped it. According to him, poems are aggressive rewritings of earlier poems; it is only by misreading that strong poets exert power over their precursors.(48) How does Bloom support his theory? In a narrow sense, he does so using six revisionary ratios.(49) These ratios provide a litmus test for spotting when influence may or may not have occurred. In a broader sense, he does so by basing the ratios on various Freudian notions, such as those of repression, or the Oedipus Complex.(50) These concepts provide the explanatory backbone for his theory. Now, if we are going to approach the problem of influence from a naturalized standpoint, then we must consider the empiric adequacy and predictive power of the revisionary ratios and the Freudian concepts underpinning them. Alas, neither claim is very secure. On the one hand, Bloom's ratios are unfalsifiable and ultimately solipsistic. If, as one commentator notes, similarity and dissimilarity can both be signs of influence, any piece written before another piece could have served as an influence.(51) How do we know which dissimilarities have arise from influence and which ones do not? On the other hand, serious doubts have been raised about the falsifiability of Freudian theory. Popper, Grunbaum, and others have suggested that clinical observation might be irrevocably theory-laden.(52)

[15] Are there other ways to try to understand influence from a naturalized standpoint? I think the answer to this question is yes. I see great opportunities for explaining influence in terms of the theories of learning, memory, and expertise.(53) Although these are both growing fields, cognitive scientists have suggested that learning involves processes such as abstraction, generalization, and problem solving, and that experts store their knowledge hierarchically in schemas. A strong case can, I think be made, for regarding Schenkerian theory as a model for explaining expert tonal composition. There are good reasons to treat Schenker's *Ursatz* and transformations as abstract representations of certain general laws of tonal motion. And, as Robert Gjerdingen has pointed out, Schenkerian graphs show us how expert tonal composers treat their material according to top-down schemas.(54) Since novice composers first master the principles of tonality in local rather than global contexts, it seems that the capacity to abstract them globally is a sign of expertise. Nicholas Cook's experiments on large-scale tonal closure seem to confirm this point.(55) To quell fears that Schenkerian theory is unfalsifiable, recent work by Douglas Dempster, Dave Headlam, and myself, has suggested that there are testable limits to the model.(56)

[16] To sum up, as I see it, the current debate between music theory and New Musicology raises important epistemological and methodological issues. To the extent that New Musicologists tell a cautionary tale about the limits of music theory, I think their points are well taken and warrant a proper response. Yes, there are problems in dealing with empirical knowledge. Yes, we must reject the positivist's accounts of objectivity, truth, and autonomy. Yes, we must tighten up the ways in which we test theories and analyses. But if this is all New Musicologists are up to, then they should tone down the rhetoric; their skepticism is not nearly as novel as they suggest and their attacks on empiricism go too far. However, when New

Musicologists call for a wholesale rejection of empiricism, I part company with them. No, I'm not convinced they have overcome the methodological problems that they and I see in traditional music theory. No, I'm not convinced that they've offered a coherent set of epistemic guidelines for engaging in analytical discourse. No, I do not believe that they've provided the only alternative for the future. For my part, I prefer to naturalize music theory. Such a view emphasizes the need to find law-like relationships not only among aesthetic properties, but also between aesthetic and non-aesthetic properties.[57] It blurs the line between music theory and cognitive psychology and it erodes the distinction between theory, analysis, and criticism.[58] Will naturalized music theory work? That, I think, is an open empiric question.[59] The best way to find out is to go and see for ourselves. Some of you may balk at this idea; that's your choice and the field is surely big enough to admit different points of view. But for those of us who are willing to crew with Neurath, the prospects are extremely exciting, though please, could someone pack the Dramamine?

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Footnotes

1. Neurath originally referred to the boat in his paper, "Protokollsaetze," in *Erkenntnis* 3 (1932) : 204–214. This essay is translated by George Schick, see "Protocol Sentences" in *Logical Positivism* ed. A. J. Ayer (New York: Free Press, 1959):199–208, esp. 201. I would like to take this opportunity to thank Jennifer Williams Brown, Linda Cummins, and Douglas Dempster for many helpful suggestions in writing this paper.
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2. Although I'm not sure when Quine first referred to Neurath's boat, he does mention it in "Identity, Ostension, and Hypostasis," originally published in the *Journal of Philosophy* in 1950. (This paper was later reprinted in *From a Logical Point of View* 2nd ed. (Cambridge: Harvard University Press, 1961/1980) : 65–79. The image a mainstay of later writings and appears as an epigram at the start of *Word and Object* (Cambridge: MIT Press, 1960): vii. The phrase "Adrift on Neurath's boat" comes from "Five Milestones of Empiricism," in *Theories and Things,* 72. For an extensive bibliography of Quine's works, see Lewis Edwin Hahn and Paul Arthur Schlipp, *The Philosophy of W. V. Quine* The Library of Living Philosophers Vol. 18 (La Salle, Ill: Open Court, 1986) : 669–686.
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3. I have borrowed this idea from Jerry A. Fodor, *A Theory of Content and Other Essays* (Cambridge: MIT Press, 1990) : 195ff.
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4. Or, at least, so New Musicologists claim. According to Leppert and McClary, "Briefly stated, the disciplines of music theory and musicology are grounded on the assumption of musical autonomy. They cautiously keep separate considerations of biography, patronage, place and dates from those of musical syntax and structure. Both disciplines likewise claim objectivity, the illusion of which is possible only when the questions considered valid are limited to those that can, in fact, be answered without qualification. The ideology of autonomy also informs the conventional musical reception of the 'music lover' who listens to music precisely to withdraw from the real world and to experience what is taken to be authentic subjectivity." Richard Leppert and Susan McClary, "Introduction," *Music and Society* (Cambridge: Cambridge Unversity Press, 1987): xiii.
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5. To quote Treitler in full: "What Taruskin calls "modernism," what Dreyfus calls "objectivism," and what Kerman calls "positivism," (he speaks often of the impact of "modernism" on musical studies, but always in a narrower sense of a phase of compositional history) are faces that bear a strong family resemblance to one another. They have been put from time to

time upon a conception of knowing that has had a continuous life virtually throughout the history of Western culture: the insistence upon the separation of the knower from the known as a condition of knowledge and the corollary disqualification of the subjective self from participation of knowing—the depersonalization of knowledge." Leo Treitler, "Review: Joseph Kerman, *Contemplating Music*," *Journal of the American Musicological Society* 42 (1989): 397–398.
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6. See, Walter Frisch's response to Leonard B. Meyer in "Comment and Chronicle," *Nineteenth-Century Music* 15/3 (1992): 261.
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7. According to Gary Tomlinson, "Facts are not those things that we see around us with an 'innocent eye.' Instead they are always contingent on interpretation, an act of assimilation into a cultural web. . . whereby they are tangled in interrelations with other strands and thus take on meaning." Gary Tomlinson, "The Web of Culture: A Context for Musicology," *Nineteenth-Century Music* 7/3 (1984): 353. Nicholas Cook comes to similar conclusions, "the theory of music is grounded in the experience of the individual, and for this reason objectivity is neither a feasible nor a desirable aim." Nicholas Cook, *Music Imagination and Culture* (Oxford: Oxford University Press, 1990): 243.
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8. As Treitler puts it, "The claim for certainty is no more than a claim that one will have provided the most coherent context of thought that is consistent with all of the evidence." Leo Treitler, "History, Criticism, and Beethoven's Ninth," *Nineteenth-Century Music* 3 (1980): 208–209. Similarly, according to Suzanne Cusick, "There can be no perfect reading of any text, be it archival, theoretical, or musical. . . . the 'new musicology' . . . requires that we confront the intellectual terrors of a world without definitive, authoritative readings, and that we develop an intellectual practice appropriate to that world." Suzanne G. Cusick, "Communication," *Journal of the American Musicological Society* 57/3 (1994) : 562–563.
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9. For example, according to Tomlinson, "We cannot comprehend art works (or anything else) outside of a cultural context. It is only a question of whether we opt for a limited and limiting discourse, a solipsistic conversation with meanings that come to us automatically, or choose instead to try to conceive of other meanings, other assumptions, other aspirations and fears." Tomlinson, "The Web of Culture," 362.
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10. To quote Cusick again, "All language acts are inevitably as slippery and evocative as the ones we recognize as rhetoric and metaphor—if only because all readers will bring to texts the illusions or fabrications of their own minds. Like the literal chimera all our readings are doomed. . . (Indeed, no 'text' exists at all independently of some reader's mind.)" Cusick, "Communication," 563.
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11. Abbate has proposed that "close readings are always ventriloquistic encodings of the critic's voice." Abbate, "Ventriloquism," Paper delivered at the annual meeting of the American Musicological Society and the Society for Music Theory in Austin, Texas October 1989.
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12. This view is most apparent in writers such as Kevin Korsyn and Joseph Straus who draw on Harold Bloom's anxiety theory of influence. See, Kevin Korsyn, "Towards a New Poetics of Musical Influence," *Music Analysis* 10/1–2 (1991) : 3–72 and Joseph Straus, *Remaking the Past: Musical Modernism and the Influence of the Tonal Tradition* (Cambridge: Harvard University Press, 1990). For extensive review of these studies, see Richard Taruskin, "Review: Korsyn and Straus," *Journal of the American Musicological Society* 46 (1993) : 114–138.
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13. Taruskin explains their rationale as follows: "Musical meaning (or expressive content) is to be construed in terms of revisionary strategies. . . . works may be evaluated in terms of the relative strength of their misreadings, thus furnishing the promised critical dimension." Taruskin, "Review," 120.

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14. To quote Fred Everett Maus, "We should not only recognize the probability of a future characterized by musical and linguistic multiplicity, but we should welcome and cultivate this multiplicity. . . . I would prefer that diversification of discourse about music be regarded as a free activity of imaginative exploration, and a positive pleasure." Fred Everett Maus, "Response," *Indiana Theory Review* 10 (1989) : 92–93.
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15. According to Subotnik, contextualist explanations must dispense with "a rather old-fashioned, vulgarized notion of scientific models" and "grapple with problems that cannot be solved through the mere establishment of facts or simple methods of cause and effect." Rose Subotnik, "On Grounding Chopin," in *Music and Society* ed. Leppert and McClary, 105–106.
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16. For example, according to Cusick, new musicology: "demands of us more rigor, not less, in multilayered readings of evidence and in awareness of our own biases; more willingness to engage with alternative readings, and to rethink our readings publicly [. . .]; more care to discern the plausible argument from the implausible, the historically or interpretively revealing from the irrelevant." Cusick, "Communication," 563.
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17. John M. Ellis, *Against Deconstruction* (Princeton: Princeton University Press, 1989): 117–118.
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18. Richard N. Boyd, "The Current Status of Scientific Realism," in *Scientific Realism* ed., Jarrett Leplin (Berkeley: University of California Press, 1984): 53.
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19. See James Harris, *Against Relativism. A Philosophical Defense of Method* (La Salle Ill.: Open Court, 1992) : 191–193.
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20. David Hume, *A Treatise Concerning Human Nature* (1739) and *An Inquiry Concerning Human Understanding* (1748). Carl Hempel, *Aspects of Scientific Explanation and Other Essays* (New York: Free Press, 1965) and Nelson Goodman, *Fact, Fiction, and Forecast* (London: University of London Press, 1955). For an extensive discussion, see Grue. *The New Riddle of Induction,* ed. Douglas Stalker (Chicago: Open Court, 1994).
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21. Richard Feynman, "Seeking New Laws of Nature," 133.
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22. The notion that scientific hypotheses can only falsified but never proved is most strongly articulated in the writings of Karl Popper. Quine supports this general notion in "Empirical Content," *Theories and Things,* 28.
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23. Philip Kitcher, *The Advancement of Science,* (Oxford: Oxford University Press, 1993): 65.
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24. For accounts of subjectivism, see Thomas Nagel, "What Is It Like to Be a Bat?" *Philosophical Review* 83/4 (1974): 435–450; and Frank Jackson, "Epiphenomenal Qualia," *Philosophical Quarterly* 32 (1982) : 127–136. For replies, see Owen Flanagan, *Consciousness Reconsidered* (Cambridge: MIT Press, 1994), Daniel Dennett, *Consciousness Explained* (Boston: Little, Brown, 1991): 398–406 and 441–448; William Lycan, *Consciousness* (Cambridge: MIT Press, 1987) : 75–81; Paul Churchland, *The Engine of Reason, the Seat of the Soul* (Cambridge: MIT Press, 1995).
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25. For example, according to Mary Ann Smart, "Feminist musicology, it is now clear, will provide no single or simple way forward. But in its questioning of established assumptions, together with its commitment to certain political truths, it may offer a shelter in the midst of competing musicological philosophies, a place where novelty and imagination can be gently placed in both musical and social realities." Mary Ann Smart, review of *Musicology and Difference: Gender and Sexuality in Music Scholarship,* edited by Ruth A. Solie, *Journal of the American Musicological Society* 47 (1994): 549.
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26. Paul Churchland, *Matter and Consciousness* rev. ed.,(Cambridge: MIT Press, 1988): 76.
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27. Owen Flanagan, *The Science of the Mind* 2nd ed. (Cambridge: MIT Press, 1991) : 81. Massimo Piattelli-Palmarini, *Inevitable Illusions* (New York: Wiley, 1994); Elizabeth Loftus and Katherine Ketcham, *The Myth of Repressed Memory* (New York: St. Martin's, 1994).
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28. This sentence is paraphrased from Roger Scruton, *Modern Philosophy* (London: Penguin Books, 1994): 56.
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29. See Zenon W. Pylyshyn ed., *The Robot's Dilemma. The Frame Problem in Artificial Intelligence* (Norwood, N. J.: Ablex Publishing Corporation, 1987). Clark Glymour describes how the frame problem articulates familiar philosophical issues in his essay in that anthology entitled, "Android Epistemology: Comments on Dennett's 'Cognitive Wheels'," 65–75.
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30. Graham Chapman, John Cleese, Terry Gilliam, Eric Idle, Terry Jones, and Michael Palin, *The Complete Monty Python's Flying Circus. All the Words* vol. 2 (New York: Pantheon, 1989): 87.
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31. Quine, "Five Milestones of Empiricism," in *Theories and Things* (Cambridge: Harvard University Press, 1981) : 71. See also "Two Dogmas," in *From a Logical Point of View*, 41.
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32. Quine, "It is a confusion to suppose that we can stand aloof and recognize all the alternative ontologies as true in their several ways, all the envisaged worlds as real. It is a confusion of truth with evidential support. Truth is immanent, and there is no higher. We must speak from within a theory, albeit any of various." "Things and Their Place in Theories," in *Theories and Things*, 21–22.
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33. Quine, "Two Dogmas," in *From a Logical Point of View*, 42–43.
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34. Quine, "Two Dogmas," in *From a Logical Point of View*, 41.
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35. Quine, "Identity, Ostension, and Hypostasis," in *From a Logical Point of View*, 78–79.
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36. Quine, "Five Milestones of Empiricism," in *Theories and Things*, 72.
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37. Quine, "What Price Bivalence?" in *Theories and Things*, 31.
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38. According to Quine, "Naturalism does not repudiate epistemology, but assimilates it to empirical psychology." Quine, "Five Milestones of Empiricism," in *Theories and Things*, 72. For extensive discussions of naturalized epistemology, see Quine,

"Epistemology Naturalized," and "Natural Kinds," in *Ontological Relativity and Other Essays* (New York: Columbia University Press, 1969): 69–90 and 114–138. These essays and others are published in *Naturalizing Epistemology* ed. Hilary Kornblith (Cambridge: MIT Press, 1985).
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39. According to Quine, "Likening me to Bradley, Cresswell saddles me with a realm of reified experience or appearance set over against an inscrutable reality. My naturalistic view is unlike that. I have forces from real external objects impinging on our nerve endings, and I have us acquiring sentences about real objects partly through conditioning to those excitations and partly through complex relations of sentences to sentences." Quine, "Responses," in *Theories and Things*, 181.
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40. According to Quine, "The proper role of experience or surface irritations is as a basis not for truth but for warranted belief." He adds, "If empiricism is construed as a theory of truth, then what Davidson imputes to it as a third dogma is rightly imputed and rightly renounced. Empiricism as a theory of truth thereupon goes by the board, and good riddance. As a theory of evidence, however, empiricism remains with us, minus indeed the two old dogmas." Quine, "On the Very Idea of a Third Dogma," in *Theories and Things*, 39.
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41. Quine, "Two Dogmas of Empiricism," in *From a Logical Point of View*, 42.
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42. For example, Quine claims that cultural relativism is inherently self-refuting: "Truth, says the cultural relativist, is culture bound. But if it were, then he, within his own culture, ought to see his own culture-bound truth as absolute. He cannot proclaim cultural relativism without rising above it, and he cannot rise above it without giving it up." Quine, "On Empirically Equivalent Systems of the World," *Erkenntnis* 9 (1975) : 327–328.
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43. Quine, "Five Milestones of Empiricism," in *Theories and Things*, 71.
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44. For discussions of naturalized aesthetics, see Douglas Dempster, "Aesthetic Experience and Psychological Definitions of Art," *Journal of Aesthetics and Art Criticism* 44/2 (1985) :153–165, and "Renaturalizing Aesthetics," *Journal of Aesthetics and Art Criticism* 51/3 (1993): 351–361.
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45. For extensive discussion of these points, see Matthew Brown and Douglas Dempster, "The Scientific Image of Music Theory," *Journal of Music Theory* 33 (1989) : 65–106 and "Evaluating Music Theories and Analyses," *Journal of Music Theory* 35 (1991): 247–279.
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46. Kitcher, *The Advancement of Science*, 9.
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47. See, for example, Harold Bloom, *The Anxiety of Influence* (New York: Oxford University Press, 1973) and *A Map of Misreading* (New York: Oxford University Press, 1975).
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48. According to Bloom, "To live, the poet must *misinterpret* the father, by the crucial act of misprision, which is the re-writing of the father." See Bloom, *A Map of Misreading*, 19.
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49. Bloom refers to these ratios as follows—Clinamen, Tessera, Kenosis, Daemonization, Askesis, and Apophrades.
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50. According to Bloom, "Nietzsche and Freud are, so far as I can tell, the prime influences upon the theory of influence presented in this book. . . . Freud's investigations of the mechanisms of defense and their ambivalent functionings provide the clearest analogues I have found for the revisionary ratios that govern intra-poetic relations." See Bloom, *The Anxiety of Influence*, 8.
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51. According to Taruskin, "if similarity is evidence of influence, but dissimilarity can be evidence of a stronger influence; if a poet's direct allusion, not to mention his open assent or avowal, can be evidence of his susceptibility, but the absence of an allusion and his denial can be evidence of stronger susceptibility—then just what can disprove the theory? Nothing can: as a theory it is breezily "verificationist," and if it pretended to scientific status it would be laughed right out of court." Taruskin, "Review," 119. The charge of solipsism is leveled by Suresh Raval in *Metacriticism* (Athens, Georgia: The University of Georgia Press, 1981) : 170.
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52. See, for example, Karl Popper, *Conjectures and Refutations* (New York: Basic Books, 1962), "Replies to my critics," in *The Philosophy of Karl Popper* ed. P. A. Schlipp (La Salle, Ill.: Open Court Books, 1974): 961–1197, Adolf Grunbaum's *The Foundations of Psychoanalysis: A Philosophical Critique* (Berkeley: University of California Press, 1984) and its sequel *Validation in the Clinical Theory of Psychoanalysis.* A Study in the Philosophy of Psychoanalysis Psychological Issues 61 (Madison CT: International Universities Press, Inc. 1993). For extensive discussion of Grunbaum's views, see *Behaviorial and Brain Science* 9 (1986). For other general surveys about the status of Freudian theory, see Sidney Hook ed., *Psychoanalysis, Scientific Method, and Philosophy* (New Brunswick, N. J.: Transaction Publishers, 1990), and Richard Wollheim and James Hopkins, *Philosophical Essays on Freud* (Cambridge: Cambridge University Press, 1982).
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53. The bibliography in this area is enormous. For useful overviews, see Michelene Chi, Robert Glaser, and Marshall J. Farred., *The Nature of Expertise* (Hillsdale, N. J.: Lawrence Erlbaum Assoc., 1988) and K. Anders Ericsson and Jacqui Smith ed., *Toward a General Theory of Expertise* (Cambridge: Cambridge University Press, 1991).
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54. Robert Gjerdingen, "With respect to the harmonic and voice-leading aspects of classical music, an early proponent of a type of schema theory was the great Austrian theorist Heinrich Schenker. He maintained that in the work of the masters the organization of harmony and voice leading was guided by a high-level schema termed the *Ursatz* or 'fundamental structure.'" See Robert Gjerdingen, *The Classic Turn of Phrase: Music and the Psychology of Convention* (Philadelphia: University of Pennsylvania Press, 1988): 23.
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55. See Nicholas Cook, "The Perception of Large-Scale Tonal Closure," *Music Perception* 5/2 (1987) : 197–206. Cook asked a group of undergraduate music majors to judge the degree of completion and long range coherence of tonally closed and tonally open versions of six pieces. He found that, for pieces lasting over a minute in length, the students were divided almost evenly between those who preferred the closed to the open one. He concluded that music theories which emphasize long range tonal connections are much more appropriate as models of composer, rather than of listener, psychology.
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56. Matthew Brown, Douglas Dempster, and Dave Headlam, "The ♯IV/♭V Hypothesis: Testing the Limits of Schenker's Theory of Tonality," forthcoming.
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57. Dempster, "Renaturalizing Aesthetics," 352.
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58. Joseph Kerman, *Contemplating Music* (Cambridge: Harvard University Press, 1985), 68–69. Kerman credits the distinction to Lewin and Cone.

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59. Quine, "Responses," in *Theories and Things*, 181.
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