

SEMANTICS OF MUSIC SCHOLARSHIP

Concepts True Of All Music

Volume I. Formulating Concepts True of All Music

Volume II. Teaching Concepts True of All Music

by

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VOLUME I

Formulating Concepts True of All Music

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Editor's Note: At the time of his death in 2006, Cantrick was close to completing and seeking publication of *Semantics of Music Scholarship*. The following text of Cantrick's draft preface and introduction is, with the exception of minor omissions and reformatting, essentially in the state in which he left it. It preserves Cantrick's notes to himself, which might be of interest to the reader as indications of points still undergoing revision as of the last entry on February 5, 2006.

Interested readers may obtain more information on Cantrick as well as access to the complete work by visiting the following Web Site: <http://cantrick-semantics-music.csdco.com>

PREFACEⁱ

The topic of this monograph is the whole world's music. However, this monograph is not an encyclopedic survey. Rather, it is a conceptual inquiry.

Encyclopedic surveys of the whole world's music are indispensable, but they do have a conceptual limitation: they take for granted that they are telling the truth. A conceptual inquiry can surmount this limitation, precisely because a conceptual inquiry takes nothing for granted. It does begin by stating explicitly that certain assumptions will be adopted, but the truth of these assumptions isn't taken for granted. On the contrary, these assumptions are adopted provisionally in order to serve a familiar Socratic purpose: inquiring what consequences follow from them.

The difficulty of any such inquiry is this: determining how concepts can be applied to sentences. Although concepts can be applied to all sorts of things other than sentences, it is only if they are applied to sentences that consequences can follow from initial assumptions. The difficulty of the present conceptual inquiry is this: determining how *music scholars'* concepts can be applied to *music scholars'* sentences.

In order to confront this difficulty straightforwardly, the present monograph proposes an innovative method of conceptual inquiry, namely the method of conceptual deduction. This

method correlates truth-functional implication in logic with sentence exemplification in semantics, whatever the field of inquiry. The present monograph narrows the present inquiry to two fields: the academic discipline of music scholarship and the academic discipline of semantics.

As for the academic discipline of music scholarship, it is a scholarly discipline in continuous development for centuries under a variety of names. For example, Zhou dynasty (11th- century to 5th-century B.C.) treatises on state ritual music were named *linyue*;ⁱⁱ Bharata's B.C.-A.D. treatise on Indian dramaturgy was named *Natya-sastra*,ⁱⁱⁱ and Hermann Helmholtz's 19th-century AD compendium on musical acoustics in relation to physiology of hearing was named *Die Lehre von den Tonempfindungen*.^{iv} Notable 20th-century developments in music scholarship include but are not limited to: ethnomusicology, set-theoretic concepts of musical structure, and computer programs for composing, analyzing, and performing music. This monograph assumes that the term 'music scholarship' is a generic term for any and all research having something to do with music, such as formal analysis (structural or stylistic or other), historical era (ancient or modern), cultural tradition (Eastern or Western or Northern or Southern), anthropological purpose (worship, work, play, or other), compositional technique (naive or sophisticated, primitive or technological, intuitive or intellectual, or other), communicative intent (serious, humorous, or other), aesthetic significance (great, minimal, null,

or other), pedagogy (elementary, secondary, or advanced), perception (empirical, illusional, delusional, or other), and so on.

As for the academic discipline of semantics, it too is a scholarly discipline in continuous development for centuries under a variety of names. Its subject-matter includes not only language meaning but also language truth. For example, Plato's 5th-century BC treatise on language meaning (the meaning of the word 'is' and its negate) was named *Sophist*;^v Raghunatha's 11th-century AD Sanskrit treatise on language truth (the truth of negative assertions) was named *Nañv_da* (on the import of the negative particles);^{vi} and John Stuart Mill's 19th-century AD treatise on both language meaning (inductive inference as dispositional properties of particular things) and language truth (deductive inference) was named *A System of Logic*.^{vii} Notable 20th-century developments in semantics include but are not limited to: the truth-tables of the propositional calculus, the truth-functors of the predicate calculus, the lambda function of concept abstraction, the truth-predicate in philosophy of language, and the empirical science of linguistic-semantics. This monograph assumes that the term 'semantics' is a generic term for any and all research having something to do with the meaning and truth of language, such as model-theoretic semantics,^{viii} trans-historical semantics,^{ix} cross-cultural semantics,^x lexical semantics,^{xi} logical semantics,^{xii} cognitive semantics,^{xiii} edit and others.

The scholarly literature of these two academic disciplines, music scholarship and semantics both broadly conceived, is the vast literature in which I have read selectively while writing the present monograph.

I have titled this monograph *Semantics of Music Scholarship* rather than *Semantics of Music*, because the latter title would be quite misleading. Semantics investigates the meaning and truth of sentences in natural language (such as English, Sanskrit, Chinese) as well as the meaning and truth of sentences in formalized language (such as truth in a model). Now, it would be quite misleading to give the impression that *music* investigates the meaning and truth of sentences in natural or formalized language. A performance of music of the Princes of Dahomey^{xiv} isn't a theological dissertation on liturgical *meaning*, and a performance of the song "I love you truly" is no proof of its *truth*. Actually, it is *music scholars* who investigate the meaning and truth of sentences in natural or formalized language, pondering whether they have made their meaning clear and whether they have told the truth. Therefore, music itself has no semantics. It is *music scholars' language* which has a semantics.

This choice of title, not incidentally, emphasizes my disagreement with that bit of folk wisdom: "music is a universal language." Folks who say that to me believe that they are agreeing with me. For they rarely demur when I point out to them: "Music isn't a language at all, because you can't find the meaning of a performance in a dictionary."

INTRODUCTION

During the first half of the 20th century in Europe and the United States many music scholars began emphasizing this point: there is no single class of fundamental concepts of music common to the diverse historical eras and cultural traditions in the world. For example, the Dutch musicologist, Jaap Kunst, coined the term ‘colotomy’, thus encapsulating in a word the distinction between colotomic structure in Javanese music and polyphonic structure in European music.⁴ At the same time many music scholars began displaying a serious interest in relating these diverse concepts to each other by pointing out similarities of meaning between musical terms from one historical era or cultural tradition and musical terms from another. For example, the German musicologist, Curt Sachs, pointed out a similarity of meaning between the Sanskrit musical term ‘Bil_val’ and the English musical term ‘major mode’⁵

By the end of the 20th century it had become clear that music scholars investigating music in diverse historical eras and cultural traditions — not only musicologists but also music theorists, music educators, music psychologists, music anthropologists, music sociologists, and others — had exerted significant influence. One of their notable accomplishments was to transform the subject-field, the world’s music, from an exotic specialty within musicology (called comparative musicology) to an independent discipline (called ethnomusicology), whose independent professional society celebrated in 2005 the 50th anniversary of its founding.

Another of their notable accomplishments was to reduce historical and cultural bias in music scholarship, notably demonstrated by the contrast between the global perspective of the 2001 twenty-nine volume *New Grove II*⁶ and the Eurocentric perspective of the 1954 nine-volume *Grove*.⁷

Nevertheless, a certain question remained controversial to the end of the 20th century: what are fundamental concepts of the world's music?

I. New Developments Raise New Questions

One reason why this question remained controversial for decades can be detected in the very developments that brought it to attention, notably those summarized in the initial paragraph above. Those developments fostered widespread, tacit, and unquestioning acceptance of two assumptions: (1) fundamental concepts of the world's music in one historical era or cultural tradition are not identical to those in another; (2) fundamental concepts of the world's music in one historical era or cultural tradition are similar to those in another. Separately these assumptions seem unexceptionable. Jointly they raise questions.

On the former assumption the world's music comprises *mutually exclusive classes*, none of which is the class of the world's music, since the members of each such class are different from the members of any other. On the latter assumption, however, the world's music comprises sub-classes of a *single class*. The members of one such sub-class are, for example, Karnatak

ragas; the members of another such sub-class are, for example, Bach fugues. The question raised is: how could there be no single class of the world's music if there is?

In the second place, on the former assumption we talk of excluded classes by formulating a negation, namely that there *is no* single class to which diverse classes of the world's music *belong*. On the latter assumption, however, we talk of included classes by formulating an assertion, namely that there *is* a single class in which all sub-classes of the world's music are *included*. The question raised is: how could a negation be an assertion?

In the third place, on the former assumption there are many mutually excluded classes which we talk about collectively by using a mass term, such as the English term 'music' or the Chinese term 'yue'. The assumption is that such mass terms can be translated inter-lingually, one into the other. Let me call it approximate translation — saying, for example, as people usually do, "Of course, the term 'music' can't be translated into the term 'yue' precisely, but the two are similar in meaning." Now, mutually excluded classes have no members in common. Therefore, what approximate translation yields is non-conceptual similarity. That is, approximate translation from one such class to another isn't a *concept* of their common meaning but rather an *intuition* of their common meaning. On the second assumption, however, there are many excluded classes which we talk about collectively without using mass terms. In this case we are not talking about intuition at all. Rather, we are talking about diverse *classes* which are

members of a single class, namely a similarity class.⁸ The question raised is: how could similarities between music in one historico-cultural context and music in another historico-cultural context be *non-conceptual* similarities (known by intuition) if they are *conceptual* similarities (known by class similarity)?

[N.B. In passing, let me allude briefly to a complex matter. The set-theoretic distinction between sub-class inclusion and class membership is conflated, unfortunately, by mass terms in some natural languages, such as the mass terms ‘music’ and ‘yue’. Fortunately, the distinction is not conflated in every natural language. For example, the distinction can be dimly recognized in the meaning of the mass term ‘saṅgīta’ in Sanskrit. This term could mean a single musical class of which the single class of singers, the single class of instrumentalists, and the single class of dancers are *members*. On the other hand, it could mean three different sub-classes, namely the sub-class of vocal music, the sub-class of instrumental music, and the sub-class of dance, which are *included in* the musical class.⁹ This dim recognition in Sanskrit of the inclusion/membership distinction adumbrates the axiom of extensionality in set theory.]

[Furthermore, although difficulties in inter-lingual translation are among those addressed by a conceptual inquiry into fundamental concepts of the world’s music, yet these difficulties cannot be reduced to the distinction between class inclusion and class membership, much less to the distinction between term intension and term extension. More complex semantic

considerations need to be taken into account, as the ensuing chapters of this monograph will explain].

In summary, the two widespread, tacit, unquestioning assumptions about the world's music raise questions about our ability to reason clearly. We make these two tacit assumptions innocently enough only to discover on second thought that we are confusing ourselves. If we have any sense of humor at all, we can enjoy a chuckle at our own expense. We are dogs chasing our tails, squirrels running in place in revolving cages. We are going nowhere.

II. Language About Language vs. Language About Music

Of course, we could say in self-defense: "Well, we are simply doing what a scholar in any discipline does to gain some perspective. We are simply asking the following fundamental question: what is the nature of our discipline?" I am afraid, however, that this defense would be ingenuously disingenuous, professing noble intentions in order to be perceived as deep thinkers. Indeed, we do need to recognize both the similarities and the differences among diverse historical eras and cultural contexts. But we do not need to ignore what it is that we are actually doing. Actually, when we talk about fundamental concepts of the world's music what we are doing is talking about talk. For it is not music which talks about these concepts; it is we, music scholars, who talk about them.

What do we usually do when we encounter confusion in our talk? We sincerely and

humbly blame it on the way we talk, and we seek to clarify the way we talk by improving our skills in expository writing. ‘Expository Writing’ is a familiar term in many college and university catalogues, being the title of a course in remedial English required of students whose elementary and secondary education has been deficient. It is a good course, of course. Elementary exercises in expository writing are profitable for anyone. I have just done some in section I *supra*.

Nevertheless, all that my expository writing exposed was that traditional concepts of the world’s music lead to dead ends. For the three questions raised in section I, if left unanswered, imply that we music scholars are contradicting ourselves. (1) Assuming that *mutually exclusive* classes of the world’s music are *included in* the world’s music is a contradiction. (2) Assuming that sub-classes of the world’s music *don’t* belong to the single class of the world’s music to which they *do* belong is a contradiction. (3) Assuming that inter-lingual translation of the term ‘music’ is *intuitive* only if *conceptualized* is a contradiction. I conclude that the usual techniques of expository writing are the wrong tools for the job to be done. All that these techniques are capable of doing is this: using *confused traditional concepts* of the world’s music to clarify *confused traditional concepts* of the world’s music.

When I have discussed the topic, fundamental concepts of the world’s music, in publications or in discussion following papers read at scholarly meetings or in informal

conversation, there have been critics, friendly as well as hostile, who have tried to pound some common sense into my head by saying: “Look, if you’re talking about *concepts* of the world’s music instead of talking directly about the world’s music, you’re just being evasive.” My reply has to be: “Thank you for your candor. You encourage me to reply in kind.”

Accordingly, let me point out that at the beginning of the 21st century many music scholars remain under the influence of certain developments in late 20th-century thought; such as post-modernism,¹⁰ semiotics,¹¹ anti-realism,¹² relativism,¹³ and phenomenology¹⁴. As a result, many music scholars take for granted that telling THE truth is an anachronism. I have to reply to them candidly: “You are ignorant of well-known facts.”

The well-known facts are that the scholarly discipline of linguistics and the scholarly discipline of semantics during the course of the 20th century gradually merged into a new discipline whose joint name is not quite yet agreed upon. Some call it semantics of natural language;¹⁵ others call it natural language semantics;¹⁶ some call it the empirical science of linguistic semantics;¹⁷ others refer to specific topics in the literature, such as the semantics of determiners, the interface between syntax and semantics, the semantics of questions,¹⁸ and so on.

Whatever this confluence of linguistics and semantics be called, its roots can be traced to the logician, Alfred Tarski, in the first half of the 20th century and to the linguist, Noam Chomsky, in the middle of the century. Its fruits were nourished during the second half of the century by, notably, the logician, Richard Montague, and the philosopher, Donald Davidson. At

the beginning of the 21st century it is flourishing prodigiously. Music scholars who ignore these 20th-century developments in semantics, or, worse yet, who confuse these developments with semiotics, or, even worse, who take for granted that these developments have been co-opted by post-modernism *et al* (mentioned above) — such music scholars deprive themselves of the tools they need for the job which needs doing, namely clarifying confusion in music scholars' language.

In being candid with music scholars about their ignorance of 20th-century linguistics and semantics, I have not gone so far as to say that the majority of music scholars have never heard of this literature. Of course, many have. It's just that the majority seem unable or unwilling to pay serious attention to it. For example, an anonymous referee for a widely respected music journal said that my giving an endnote to support a specific point by citing a specific article or book from the semantic literature “sounds like name-dropping”. For another example, one music scholar for whom I have the greatest respect, a good friend, asked me in all sincerity: “Is that stuff worth reading?” I don't say that I need to refute such remarks. I only say that such remarks illustrate music scholars' ignorance of the semantic literature.

Nor do I imply that the majority of music scholars are indolent. They would find time in their busy schedules to read some of the 20th-century semantic literature, were they convinced that there was any good reason to do so. It will not take me long to summarize two influential

distinctions in 20th-century semantics which address the very doubt which my candid critics have expressed, namely whether it is evasive to talk about *concepts* of the world's music instead of talking directly about the world's music.

The first influential distinction in 20th-century semantics to which I call attention is the distinction between mention of words and use of words.¹⁹ Consider the following sentence: (1) 'listening to music' is a gerund phrase. By contrast, consider the following sentence: (2) listening to music is auditory observing. The words, listening to music, are not used alike in the two sentences. Indeed, the first sentence does not *use* those words at all; rather, it *mentions* those words. When those words are *mentioned* by enclosing them in a pair of single quotation marks, the first sentence is about *music scholars' language*. When those words are *used* by omitting a pair of single quotation marks, the second sentence is about *music*.

The second influential distinction in 20th-century semantics to which I call attention is the distinction between meta-language and object language. Consider again sentence (1): 'listening to music' is a gerund phrase. This sentence is *about* music scholars' language. Consider again sentence (2): listening to music is auditory observing. This sentence is *in* music scholars' language.

Now, to recognize this distinction between 'about' and 'in' is to recognize the distinction between meta-language and object language. The term 'meta-language' came into widespread use during the 20th century, but it came to be used prestigiously in a variety of senses, and as an

unfortunate result the term acquired a sort of vague *chic*. In this monograph I follow Tarski by introducing the meta-language/object language distinction here in his sense of those two terms: that which is about language is the meta-language, whereas that which the meta-language is about is the object language. Then the relevance to the present inquiry becomes clear: concepts of *music scholars' sentences* are formulated in the meta-language of the present inquiry, whereas concepts of *music* are formulated in the object language of the present inquiry.

Music scholars who ignore these two well-known facts (that the mention/use distinction is taken for granted in 20th-century semantics, as is the meta-language/object language distinction) have lost their way in the dark. In the first place, they don't even know what it is that they are talking *about*: music or music scholarship. In the second place, they don't even know what language it is that they are talking *in*: an object language in a natural language or a meta-language in that same natural language.

III. A Declaration of Independence for Music Scholarship

It is no wonder that the meta-language/object language distinction became widely accepted in the 20th century and continues to be widely accepted at the beginning of the 21st: it casts new light on meaning and truth. Consider again sentence (1): 'listening to music' is a gerund phrase. This is a sentence in music scholars' meta-language. The meaning and truth of

this sentence are obvious. For it states a tautology, being true simply by virtue of the *meaning* of the words. Consider again sentence (2): listening to music is auditory observing. This is a sentence in music scholars' object language. The meaning and truth of this sentence are dubious. For it doesn't state a tautology, not being true simply by virtue of the *meaning* of the words.

The reason that sentence (2) is dubious is that its meaning is ambiguous and its truth uncertain. If I say to someone, "You are beginning to hear a thing or things in Berg's *Lyric Suite* that you never heard before," the meaning of my sentence is ambiguous because my sentence implies vaguely that hearing a thing or things in music is more than just hearing sounds, and the truth of my sentence is uncertain because the sentence may be true in some situations but false in others. For example, if I am in a teaching studio, I may be demonstrating a melodic line of the piece by performing it, but I may not perform it the same way again tomorrow. For another example, if I am in a seminar, I may be contrasting an excellent recording of the piece with a mediocre one, but tomorrow I may discover to my consternation that my aesthetic judgment has changed abruptly for no good reason that I can give. For yet another example, if I am rehearsing the piece, I may be contrasting the flattering acoustics of this concert hall with the deplorable acoustics of another one, but tomorrow my audiologist may discover that my hearing is defective. For a fourth example, if I am writing an article, I may be arguing that the musical structure of the piece symbolizes Berg's extra-marital love affair, but tomorrow my worst professional enemy may destroy my credibility by demonstrating that I cannot even recognize

the piece when an unidentified excerpt from it is played for me on a compact disc (CD). To give a fifth example, if I am gossiping with my best professional friend, I may be making a sarcastic insinuation about last Tuesday's performance of the piece by Ensemble X, but my friend may cheerfully reply in kind: "So, Herr Doktor Professor, you are the world's greatest authority on early 20th-century performance practice in Vienna?"

Such ambiguities of meaning and uncertainties of truth cannot be accepted casually in the name of late 20th-century developments in thought, such as postmodernism, semiotics, anti-realism, relativism, and phenomenology. To do so would be to take for granted that the terms 'meaning' and 'truth' are anachronisms — at best a naive assumption betraying ignorance of 20th-century developments in logic and semantics, at worst a dilettante's reliance on fashionable buzz-words.

My claim in this monograph is that the meaning ambiguities and truth uncertainties of music scholars' language can be clarified by adopting an innovative method for a conceptual inquiry, namely the method of conceptual deduction. According to this method, a conceptual inquiry begins by distinguishing negation in an object language from negation in a meta-language for each field of scholarship uniquely, whether the field of music scholarship or some other field.

Such a claim has never been made, to the best of my knowledge. Therefore, if I can defend this claim successfully, then we music scholars can make a declaration of independence.

We can declare that, independently of other scholarly disciplines, we speak a single object language uniquely suited to our own discipline. The method of conceptual deduction enables us to draw conclusions from premises *truth-functionally*, regardless of which natural language we use to formulate our concepts.

In methodological matters we tend to be bullied by scholars in other fields. The method of conceptual deduction delivers us from intimidation. Suppose that a model theorist says to us, in effect: “Oh, just tell us what the domain of individuals of music is, and we will clarify your confused methods of reasoning for you.” We can reply: “Music isn’t a logical method of reasoning.” Suppose that a structural linguist says to us, in effect: “Oh, just tell us what the minimal unit of syntax in music is, and we will clarify your confused methods of reasoning for you.” We can reply: “A minimal unit of musical structure isn’t a minimal unit of linguistic syntax.” Suppose a post-modernist says to us, in effect: “Oh, just tell us what constraints music imposes on its language game, and we will clarify your confused methods of reasoning for you.” We can reply: “Music cannot be reduced to word games.” These well-intentioned scholars are inventing problems we don’t need. Our reply to all of them, collectively, can be: “It isn’t music which is true or false; it is music scholars’ sentences.”

Suppose that, even within our own field of scholarship, a set-theorist says: “Conceptualize music structure in terms of sets (in the mathematical sense), and we will clarify your confused methods of thinking for you.”²⁰ We can reply: “Set theory in the mathematical

sense can't distinguish music from mathematics.” In replying thus, we don't reject set theory. On the contrary, we use the method of conceptual deduction to clarify music scholars' confusion over set theory. For example, the method enables us to recognize that a musical sequence is a set-theoretic function from physical actions of physical objects to musical performances of musical instruments.

IV. Brief Summary of Volumes I and II

Volume I formulates concepts which apply alike to the *whole* world's music rather than exclusively to this or that *part* of the world's music, such as a historical era or a cultural tradition. Volume II develops curricular principles enabling these concepts to be taught at *any educational level*, whether elementary, secondary, or higher, and in all historico-contexts, whether ancient or modern, whether familiar or foreign.

V. Synopsis of Volume I

Chapter 1 recognizes that all music scholars use one and the same language, because they all use one and the same language mix (LM), which mixes technical language (scientific, mathematical, or other) with natural language (Italian, Arabic, Japanese, or other). Chapter 2 reveals the inadequacy of this LM: it fails to identify a single universe of discourse. Chapter 3

not only introduces an innovative method of inquiry, the method of conceptual deduction (as I said in section III *supra*), but also effects a drastic reform in the concept of sentence negation. For this method rejects the conventional assumption that joint denial of a sentence and alternative denial of that sentence alike define negation of that sentence.²¹

Chapter 4 applies to music scholarship this innovative method of conceptual deduction. Because this method has been applied to music scholarship rarely, if ever, I need to give a somewhat full summary here.

Chapter 4 begins by making a certain assumption, namely: hearing has something to do with music. This sentence is not assumed to be true. It is adopted provisionally in order to discover what consequences follow from it. This assumption is re-formulated in order to distinguish the mention of it from the use of it, thereby transforming it into the first formula of the conceptual inquiry:

Formula 1. 'Hx' sym Hx
T
F

This formula can be read tersely as follows: 'hearing a thing or things' symbolizes hearing a thing or things. It can be read more fully as follows: the *mentioned* words 'hearing a thing or things' are *used* to symbolize that auditory observing occurs. A semantic *valence-table*, TF, is assigned to Formula 1 to make clear that two and only two possibilities are assumed: either the sentence is true or else it is false.²² The following question, is Formula 1 true or is it false, is purposely left unanswered in order to avoid a circular argument (*petitio principii*). In other

words, to leave the question unanswered is to avoid the following fallacy: assuming initially that Formula 1 is true in order to conclude finally that Formula 1 is true. Likewise, the following fallacy is avoided: assuming initially that Formula 1 is false in order to conclude finally that Formula 1 is false.

The second formula is derived from the first by the unconventional method of conceptual deduction. According to this method, the second formula is a conclusion derived from four premises.

1st premise. ‘(‘Hx’ sym Hx ↓ ‘Hx’ sym Hx)’ sym ~(‘Hx’ sym Hx)

T	F	T	F	T
F	T	F	T	F

This premise can be read as follows: the *mention* of auditory observing in neither one situation nor another is *used* to symbolize that auditory observing doesn’t occur. The FT written beneath both the denial operator, ↓, and the negation operator, ~, is a semantic *truth-table*. Assigning corresponding truth-tables to the joint denial and negation operators is a convention of the propositional calculus.

However, no truth-table is written beneath the term, sym, in its central position connecting sentence symbol to sentence symbolandum. For in that central position it isn’t a logical operator. Rather, it is a concept in natural language, namely semantic descent.²³ It descends from sentence mention to sentence use, unlike Formula 1 in which semantic descent is from term mention to term use.

The second premise substitutes alternative denial for joint denial.

$$\begin{array}{ccccccc}
 2^{\text{nd}} \text{ premise. } & \text{'(Hx' sym Hx} & | & \text{'Hx' sym Hx)} & \text{' } & \text{sym} & \sim \lceil \dots \text{ sym } \dots \rceil \\
 & \text{T} & \text{T} & \text{T} & & ? & \text{T} \\
 & \text{F} & \text{F} & \text{F} & & ? & \text{F}
 \end{array}$$

This premise can be read as follows: the *mention* of auditory observing in either one situation or else in another (but not in both) is *used* to symbolize that an unspecified sentence is negated.

The left corner, \lceil , and the right corner, \rceil , paired constitute a conventional logical symbol for quasi-quotation.²⁴ Quasi-quotation is a logical symbol for using a sentence without specifying it. Since the negated sentence isn't specified, its truth or falsity is undecided. Hence the question marks.

Assigning TF to alternative denial rejects a conventional rule of the propositional calculus. The convention is that alternative denial and joint denial define negation alike and for that reason are assigned one and the same truth-table FT. The rejection of this convention is proposed and defended at length in chapter 3. As a result, the *truth-functional implication* of joint denial differs from that of alternative denial. Whereas the 3rd premise is implication by *joint* denial, the 4th premise is implication by *alternative* denial. Let me consider each separately.

$$\begin{array}{ccccccc}
 3^{\text{rd}} \text{ premise. } & \lceil \dots \downarrow \dots \rceil & & & & & \sim(x)(\text{'Hx' sym Hx}) \\
 & \text{F} & \text{T} & \text{F} & & & \text{T} \\
 & \text{T} & \text{F} & \text{T} & & & \text{F}
 \end{array}$$

This premise can be read tersely thus: that an unspecified sentence is jointly denied *implies truth-functionally* that no hearing of x occurs. More fully stated, the 3rd premise can be read thus: that an unspecified sentence exemplifies joint denial, $\lceil \dots \downarrow \dots \rceil$, implies truth-functionally, $_$, that hearing of x doesn't occur, $\sim(x)(\text{'Hx'} \text{ sym Hx})$. The double turnstile, $_$, is a truth-functional logical symbol for defining truth in a language structure (truth in a model).²⁵

Now, it is the 1st premise which assumes that a certain *term connective* connects a certain term mentioned to that term used. That is, symbolizing connects 'Hx' to Hx. Connecting a term to a term by logical symbolizing isn't truth-functional connection. By contrast, it is the 3rd premise which assumes that a certain *sentence connective* connects a sentence unspecified to a sentence specified. That is, implication connects quasi-quotation to negation. Such implication is truth-functional. Because of this distinction no truth-table is assigned to the 1st premise (beneath 'sym'), whereas a truth-table is assigned to the 3rd premise (beneath ' $_$ '), namely the truth-table: TF.

Assigning a truth-table to the 3rd premise suggests a way to discover what consequences follow from assuming Formula 1, namely: consider sentence negation to be a deduction from truth-functional premises (rather than a contradiction). Yes, but the 3rd premise is only one step in that direction. By itself it is incapable of making any such deduction. For it does create a contradiction: it contradicts Formula 1. Whereas Formula 1 says that auditory observing occurs,

the 3rd premise says that auditory observing doesn't occur. No deduction has been made. The argument has reached an impasse.

However, if we retain the 3rd premise without mistaking it for a deduction, then the impasse can be removed by introducing the 4th premise. The 4th premise replaces joint denial with alternative denial.

$$\begin{array}{cccc}
 \text{4}^{\text{th}} \text{ premise. } \lceil \dots \mid \dots \rceil & \text{—} & (x)\sim('Hx' \text{ sym } Hx) & \\
 \text{T} & \text{F} & \text{T} & \text{T} \\
 \text{F} & \text{T} & \text{F} & \text{F}
 \end{array}$$

This premise can be read tersely thus: that an unspecified sentence is alternatively denied *implies truth-functionally* either that no hearing of x occurs or else that any hearing of x doesn't occur.

More fully stated, the 4th premise can be read thus: that an unspecified sentence exemplifies alternative denial, $\lceil \dots \mid \dots \rceil$, implies truth-functionally either that what doesn't occur is hearing x or else that what does occur is not hearing x. In other words, what is implied is either that not any hearing of x occurs, $\sim(x)(\text{'Hx' sym Hx})$, or else that any not hearing of x occurs, $(x)\sim(\text{'Hx' sym Hx})$.

Any not hearing of x is auditory oblivion. It occurs in individual situations such as day-dreaming during a concert, dozing during a preacher's sermon, ignoring three out of four persons talking to you all at once, not hearing the eighth tuba in a performance of *Siegfried's Rhine Journey* due to inadequate study of the score, a hearing impaired person in a busy restaurant

unable to converse with anyone else at the table, a quarterback's voice drowned out by 80,000 fans in the stands cheering, and so on. An individual situation occurs once and only once.

The 4th premise is a tautology. It implies truth-functionally that there are only two alternatives to choose from in deducing a conclusion from the four premises: either hearing doesn't occur or else not hearing does occur. The former cannot be chosen, being otiose (as I pointed out in explaining the 3rd premise). Therefore, the latter must be chosen, being the only alternative. So it is that the conclusion deduced from the four premises is Formula 2.

$$\text{Formula 2. } (x)\sim('Hx' \text{ sym } Hx)$$

F
T

This formula can be read tersely thus: auditory oblivion occurs. More fully stated, Formula 2 can be read thus: a certain sentence, namely auditory oblivion occurs in individual situations, is deduced from a certain sentence, namely auditory observing occurs in no situation. Summarily, whereas Formula 1 assumes without question that auditory observing occurs (in order to discover what consequences follow from this assumption), Formula 2 reveals a consequence which follows from this assumption, namely: auditory oblivion occurs.

VI. An Infinite Algorithm of Deduction

So much for chapter 4. In subsequent chapters an n-place algorithm of conceptual deduction emerges: 3-place recursive denial (joint and alternative) implies truth-functionally that a new conclusion is deduced; 4-place recursive denial implies truth-functionally that another

new conclusion is deduced; and so on *ad infinitum*. An infinite supply of new concepts is deducible.

For example, the 3-place deduction casts new light on music scholars' concepts of rhythm and meter by *implying truth-functionally* that there is a null relation between not any auditory observing and any not auditory observing. They are related by a spatio-temporal point of no spatio-temporal extent. The new light thereby shed on music scholars' concepts of rhythm and meter is as follows: a null relation is distinguished from a null entity.²⁶ Thus, a barline is a null relation in a performance: it relates a preceding sound or silence to a succeeding sound or silence by a spatio-temporal point of no spatio-temporal extent.

Subsequent chapters need not be summarized here. Each can be summarized succinctly by its chapter title in the Table of Contents. In conclusion, let me summarize volumes I and II in a single sentence: semantics of music scholarship is deep-sea diving for treasure in unexplored situations.

VII. Postscript

In this Introduction to the first volume, I have been making broad generalizations. I would not be surprised to hear some reader express skepticism: "How could these broad generalizations possibly be suited to the purpose of teaching an introductory course for students

who are majoring in music as well as for students who have declared a major in some other field or have not declared a major at all?”

I would not take this question to be an objection. I would take it to be a perfectly reasonable request. Therefore, I would not reply brusquely: “Read volume II.” Without oversimplifying volume II, I would do something to comply with the request, namely: write a brief postscript to this Introduction showing that even a few creative exercises assigned during the very first class meeting of the semester (quarter, trimester, summer session) will challenge any student at the secondary or higher educational level, whether the student has previous training in some musical tradition or not. As for lesson plans at the elementary level, the same concepts can be formulated in less sophisticated language. In any case, whatever the educational level may be, teaching fundamental concepts of the world’s music begins by performing any physical actions of any physical objects performed audibly in such a way that they are connected instantly to any physical actions of any physical objects performed inaudibly.

Herewith a summary of some of the material near the beginning of chapter 9. At the initial class meeting of a course at the secondary or higher educational level the teacher says: “Each of you look around the classroom and discover some object some distance away which you could make audible. Now all of you get up from your seats, walk to the selected objects, and begin to make them audible, using any actions you please.” The teacher looks rapidly at one student or another, displaying great interest for perhaps 5-10 seconds (depending on how many

students are enrolled in the class), before instructing all to stop and return to seats. The second creative exercise is similar: each student discovers another object some distance away which he or she could make *inaudible*, all students get up from their seats, walk to the selected objects, and begin to make these objects *inaudible*, using any actions desired. Again the teacher looks rapidly at one student or another, displaying great interest for perhaps 5-10 seconds, before instructing all to stop and return to seats.

Then the teacher proceeds to do some teaching. He or she explains: “Let me abbreviate the words ‘an object of action’ to the small letter x, and let me abbreviate the words ‘a set of audible object-actions’ to the capital letter S (for sounding). Then I can formulate an elementary concept of set theory. It is this: whenever x is performed audibly, as all of you just did, x is a member of a sounding set.”

The teacher writes on the blackboard the following sentence: x is a member of a sounding set. The teacher explains that the verb phrase, ‘is a member of’, is often read as follows: is an element of. In either case, it is usually abbreviated to the Greek letter epsilon, corresponding to the Roman letter e. Then she or he writes beneath the sentence its conventional abbreviation: $x \in \{S\}$.²⁷

The second creative exercise is explained similarly: “Whenever x is performed inaudibly, as all of you just did, x is a member of a silent set.” The teacher writes on the blackboard the following sentence: x is a member of a silent set. Then she or he writes beneath that sentence its

abbreviation: $x \in \{\$ \}$, pointing to the letter S with vertical stroke through it and saying:

“Cancelled sound is silence.”

The teacher introduces the third creative exercise by saying: “Each of you select from your pocket or purse or bag a small object, such as a comb or a coin or a key, which can be lightly scraped over a surface without leaving marks or scratches. Now begin to make scraping actions audibly across some hard surface, such as a desk top or a chair or a bookbag, and when I make a little silent bounce in the air, using my wrist, then instantly begin to make scraping actions audibly across some other hard surface, such as a textbook or a notebook or a shoe. Stop when I tell you to.”

The students will not begin right together, nor will they stop right together. This is not an oversight on the teacher’s part. This is purposeful. The purpose is to teach instant connection. If, as is likely, some students performed silent actions during this time, such as a silence after each scrape, the teacher points this out, saying: “The assignment was to connect one sound to another instantly. If you performed so much as a single silence between scrapes, you didn’t satisfy the assignment. Let’s try again.”

If some students still perform silences, the teacher does not waste time rehearsing to perfection but instead proceeds quickly to explain the point: “When all of you perform this creative exercise correctly, each of you *instantly* connects scraping some object to scraping some

other object.” The teacher writes on the board, $x \in \{S/S\}$, and explains that the slant is a symbol for *instant* connection of one sounding set to another.

The teacher immediately proceeds to the fourth creative exercise: “Right now begin to make scraping actions with the comb or coin or key or whatever it was that you used before. This time, however, scrape *inaudibly* against some yielding surface, such as the air in front of you or a handkerchief dangling from your other hand or your lips, and when I make a little silent bounce in the air, using my wrist, then instantly begin to make scraping actions inaudibly against some other yielding surface, such as your hair or your clothing or your skin. Stop when I tell you to.”

If some student performs sounds when connecting two silent scrapes, for example by unintentionally making a scrape against clothing audible, the teacher points out that the assignment was to connect silence to silence instantly and that performing sounds fails to fulfill this assignment. If some student makes some action other than a scraping action, for example a lifting action, when changing from a scrape of a handkerchief to a scrape of the hair, the teacher points out that the assignment was to perform one kind of inaudible action, scraping, not two kinds of inaudible actions, scraping and lifting. Then the teacher conducts the exercise again.

If some students still fail to connect silence to silence instantly, the teacher wastes no time rehearsing to perfection but instead proceeds quickly to explain the point. She or he writes on the board, $x \in \{S/S\}$, and proceeds to explain that the slant is a symbol for instantly connecting one set of silences to another. The teacher pauses for a moment to catch everyone’s

attention and then, speaking a bit more emphatically, says: “A silence in music is not like time-out in a basketball game: a silence doesn’t stop the music.”

The teacher resumes normal speaking and continues: “Now let’s summarize the third and fourth creative exercises. Every object-action is either sounding or silent, but only some are musical. Those which are musical are those which belong to sounding or silent sets if and only if one is connected to the other instantly. This is musical time-keeping.” The teacher pauses a moment to catch everyone’s attention and then, speaking a bit more emphatically, adds: “But notice this: musical time is not clock time, since a performer is not a clock.”

Whether these four creative exercises will fill all the available time during the first day of classes — this is unpredictable. It depends on whether the students’ questions can be answered briefly. (The teacher should not get bogged down in discussion of sets in a music course vs. sets in a mathematics course.) It also depends on minimizing the time spent on preliminary matters, such as attendance policy, taking roll, and so on. (The teacher can put hand-outs on a music stand at the door and start teaching while an attendance signature sheet is being circulated.) It also depends on moving through the creative exercises quickly. (The teacher must study them thoroughly before coming to class.) It is advisable to cover at least eight creative exercises during the first class period in order to make a substantial homework assignment. The students must be left with the impression that creative exercises are serious fun.²⁸

NOTES

Notes for Preface

i. For detailed criticisms I am indebted to (alphabetically listed) the ethnomusicologist and music theorist Stephen Blum, the philosopher and aesthetician Nelson Goodman, the philosopher and perceptive music listener John Lango, the philosophers and aestheticians Joseph Margolis and Mary Mothersill, the mathematician, logician, aesthetician, and computer composer John Myhill, the ethnomusicologist and music theorist Jay Rahn, the philosopher, aesthetician, and professional flutist Alan Tormey, and the logician and philosopher Joseph Ullian.

For illuminating conversations and correspondence I am indebted to many others, notably (alphabetically listed) the mathematician Joseph Barback, the Hindustani native speaker Mamta Bhargava, the composer and music theorist Robert Cogan, the logician John P. Corcoran, the philosophers of music Douglas Dempster and Claire Detels, the semanticists Janet D. Fodor and Jerry A. Fodor, the aesthetician Morris Grossman, the mandarin speaker Constance Hsu, the logician John T. Kearns, the composers and music theorists Jonathan Kramer and Fred Lerdahl, the music theorist Judith Lochhead, the aesthetician Renee Lorraine, the musicologist, music theorist, and philosopher of music Leonard Meyer, the philosopher and Arabist Alan Podet, the philosopher and aesthetician Ronald Roblin, the Arabist Issa Roustom, the ethnomusicologist and pianist William Tallmadge, and the ethnomusicologist Michael Wright, as well as to editors and anonymous referees for the *Journal of Aesthetics and Art Criticism*, the *British Journal of Aesthetics*, the *Journal of Philosophical Logic*, *Music Analysis*, *Music Theory Spectrum*, and *Perspectives of New Music*.

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- ii. Liang Mingyue, *Music of the Billion: An Introduction to Chinese Musical Culture* (Heinrichshofen: New York, 1985) ch. 3, p. 56; citing *Liji* “The Records of Rites”
- iii. “Written sometime between the second century B.C. and the sixth century A.D.” Bonnie Wade, *Music in India: the Classical Traditions* (Prentice-Hall: Englewood Cliffs, NJ, 1979), ch. 1, p. 14, citing R. Rangaramanuja Ayyangar, *History of South Indian (Carnatic) Music: From Vedic Times to the Present* (Madras: R. Rangaramanuja, 1972) “which must be used cautiously and in conjunction with other materials on South Indian music, for it is highly anecdotal”.
- iv. *Die Lehre von den Tonempfindungen als physiologische Grundlage für die Theorie der Musik* (Brunswick, 1863; English trans., 1875, as *On the Sensations of Tone*)
- v. B. Jowett, ed., *The Dialogues of Plato*, 3rd ed. (Random House: New York 1937; re-printed by arrangement with Oxford University Press) vol. 2, p. 221-280
- vi. B.K. Matilal, *The Navya-ny_ya Doctrine of Negation: the Semantics and Ontology of Negative Statements in Navya-ny_ya Philosophy* (Cambridge: Harvard UP, 1968)
- vii. Book I “Of Names and Propositions”; Chapter 1, section 1, “Theory of Names” p. vii; 8th ed. (London: Longmans, Green, 1904)

viii. John Etchemendy, *The Concept of Logical Consequence* (Cambridge: Harvard UP, 1990)

ix. Norman Kretzmann, “Semantics, History of”, in *The Encyclopedia of Philosophy* (New York: Macmillan, 1967), vol. 7, pp. 358-406

x. Matilal, *The Navya-ny_ya Doctrine*

xi. D.A.Cruse, *Lexical Semantics* (Cambridge: UP, 1986)

xii. Gila Y. Sher, “Semantics and Logic” in Shalom Lappin, ed., *Handbook of Contemporary Semantics* (Oxford: Blackwell, 1996)

xiii. Ray Jackendoff, *Semantics and Cognition* (Cambridge: MIT Press, 1983)

examine his later SEMANTICS (c. 2001?) and possibly insert here

xiv. E.g., “Festival of the Tohossou” in *Anthology of Music of Black Africa* (Los Angeles: Everest, c. 1965) LP 3254/3, recorded and annotated by Gilbert Rouget under the sponsorship of *l’Instiut Français d’Alfrique Noire* and the *Musée de l’Homme* in conjunction with UNESCO.

Notes for Introduction

4. “The colotomy — at any rate in Solo — also differs from that of srepegan.” “The colotomic structure of [gending Kalanganjur] is that of an ordinary ketawang composition, from which it varies only by its faster tempo.” “One will hear the following colotomic sequence of beats, urging and driving, as it were, towards the second movement.” *Music in Java*, 3rd ed. enl. (The Hague: Nijhoff, 1973; orig. publ. 1949) pp. 308, 310, 314.

5. “Modern *Bil_val*, for example, the counterpart of our major mode, has the tetrachordal skeleton C-F-G-D ...” *The Rise of Music In the Ancient World, East and West* (New York: Norton, 1943) ch. 4 “Ragas” p. 172.

6. *The New Grove Dictionary of Music and Musicians*, 2nd ed., edited S. Sadie (Oxford UP: Oxford, 2001).

7. *A Dictionary of Music and Musicians*, 5th ed., ed. E. Blom (New York: Macmillan, 1954)

8. Compare: “We shall define the propositional language of similarity type X, in symbols L(X).” Wilfrid Hodges, “Elementary Predicate Logic”, in D. Gabbay and F. Guentner, *Handbook of Philosophical Logic* (Dordrecht: Reidel, 1983) vol. 1, ch. 1 “Elementary Predicate Logic”, sec. 3 “Why Truth-tables Work”, p. 13.

Compare: “Similarity, ever ready to solve philosophical problems and overcome obstacles, is a pretender, an impostor, a quack.” Nelson Goodman, “Seven Strictures on Similarity”, in L. Foster and J. W. Swanson, eds., *Experience and Theory* (Boston: U. of Mass. Press, 1970); reprinted in Goodman, *Problems and Projects*, 1st ed. (Indianapolis: Bobbs-Merrill, 1972) ch. IX, essay 2; p. 437.

Compare: “Certainly, likeness of meaning is a dim notion, repeatedly challenged. Of two predicates which are alike in extension, it has never been clear when to say that they are alike in meaning, and when not; it is the old matter of featherless bipeds and rational animals, or of equiangular and equilateral triangles. Reference, extension, has been the main thing; meaning, intension, the infirm.” W. V. Quine, “Ontological Relativity”, *The Journal of Philosophy* (April, 1968) vol. LXV, no. 7, pp. 185-212.

9. Regula Kureshi, “India”, in *The New Grove*, 2nd ed., section I “The region, its musical context and musical categories”; sub-section 3 “Musical Categories”, p 152

10. Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge*, trans. G. Bennington and B. Massumi (Minneapolis: UP, 1984; orig. pub. in French 1979)

11. M. Herzfeld and M. Lenhart, eds. *Semiotics 1980* (New York: Plenum, 1982) N.B. I now repudiate unequivocally my essay included in this anthology, which revealed my inadequate grasp of 20th-century semantics.

12. “Nearly thirty years ago [before 1992] I made a proposal to [make] a comparative study of disputes over realism. It had struck me that a variety of different traditional disputes within philosophy took the form of an opposition between a realist view of some particular subject-matter and a rejection of realism concerning that subject-matter. ... In attempting to delineate the common framework of the various disputes, I naturally labelled one side ‘realist’; for the other, I chose deliberately the colourless term ‘anti-realist’. ... I did not want to tie opposition to realism to any specific doctrine, but to consider any form that a rejection of realism might take.”

Michael Dummett, *The Seas of Language* (Oxford: Clarendon, 1993) ch. 20 “Realism and Anti-realism”, pp. 463-464

“... the difference between realism and anti-realism emerges initially from the proper way to account for truths (or references) that are in fact expressed by us.” Gerald Vision, *Modern Anti-Realism and Manufactured Truth* (London: Routledge, 1988) ch. 7 “Language-games and Anti-realism”, p.240.

“The debate between realism and anti-realism ... has once again moved to the centre of the philosophical stage.” John Passmore, *Recent Philosophers* (LaSalle, IL: Open Court, 1985) ch. 5 “Realism and Relativism”, p. 87.

13. In this book “what emerges can perhaps be described as a radical relativism under rigorous restraints” Nelson Goodman, *Ways of Worldmaking* (Indianapolis: Hackett, 1978) Foreword, p. x

14. M. Merleau-Ponty, *Phenomenology of Perception*, trans. Colin Smith, 3rd impression (London: Routledge, Kegan Paul, 1966)

15. Donald Davidson and Gilbert Harman, eds. *Semantics of Natural Language* (Dordrecht: Reidel, 1972).

16. Keith Allan, *Natural Language Semantics* (Oxford: Blackwell, 2001).

17. G. Chierchia and S. McConnell-Genet, *Meaning and Grammar* (Cambridge: MIT Press, 1990).

18. Lappin, ed. *The Handbook of Contemporary Semantics*.

19. Originally made by the 19th-century German logician, Gottlob Frege, but not widely influential until the truth-predicate became a topic of widespread controversy in the 20th century.

20. See, e.g., David Lewin, *Generalized Intervals and Transformations* (New Haven: Yale UP, 1987). Lewin prefers to call sets: families or collections of objects or members (chapter 1 “Mathematical Preliminaries”, p. 1). This preference enables him to define truth not as a property of sets but rather as equivalence between families. Equivalence between families is defined as *functional equality* (definition 1.2.2, p. 2). “For example, let us take S, S', and S'' all to be the family of positive integers ... For another example, let us take S, S', and S'' all to be the family of the twelve pitch-classes.” Lewin is assuming tacitly that functional equality of mathematical entities, namely positive integers, and functional equality of musical entities, namely pitch-classes, exemplify the same sort of thing. That is, he is assuming tacitly that the term ‘functional equality’ is unequivocal. Throughout the book he gives examples of musical passages which make this tacit assumption seem to be intuitively plausible. His widespread influence testifies to the fact that many knowledgeable music theorists share his intuition. Nevertheless, he and his followers are equivocating. Consider the opening paragraphs of chapter 2 “Generalized Interval Systems”. I quote. “2.2.1 . EXAMPLE. The musical space is a succession of time points ... 2.2.3 EXAMPLE. The musical space is a family of durations.” pp.22-23. What is equivocal? It is the assumption that not having temporal extent and having temporal extent are functionally equivalent examples of one and the same thing, namely musical

space. This reduction of truth to functional equivalence is a flat-out contradiction between the sentence ‘a musical space contains single temporal points which don’t enclose durations’ and the sentence ‘a musical space contains pairs of temporal points which enclose durations’.

Formulating primary concepts of the whole world’s music requires a method of reasoning which can account for sentence negation without contradiction. This method is summarized tersely in section V *infra*.

21. The relation between negation and linguistics is exhaustively researched in Laurence R. Horn, *The Natural History of Negation* (San Francisco: CSLI Publications, Stanford U., 2001; orig. publ. Chicago: UP, 1989)

22. Multi-valent logics are excluded from the scope of the present inquiry.

23. Semantic descent is the dual of semantic ascent, the latter being introduced originally by W.V. Quine in *Word and Object* (Cambridge: M.I.T. Press, 1960) sec. 56, pp. 270-76.

24. Originating with W.V. Quine, *Mathematical Logic*, 1st ed. (New York: Norton, 1940) ch. 1, sec. 6, “Quasi-quotation”, pp. 33-37

25. Hodges, “Elementary Predicate Logic”, formula (3.4), p. 13

26. This distinction between a null relation and a null entity is ignored in a certain well-known line of reasoning about rhythm and meter which runs from Olivier Messaien early in the 20th century through Grosvenor Cooper/Leonard Meyer at mid-century to Jonathan Kramer late in the century and Christopher Hasty still later.

27. THIS MATERIAL MAY BE USEFUL IN CHAPTER 9. In chapter 5 titled “Performing Null Temporal Points” the distinction between hearing x and heard x is not ignored, as it is in the teacher’s explanation of the first creative exercise. Ch. 5 recognizes a distinction between a gerund phrase, hearing a thing or things, and an existential quantification: some thing or things is heard. Furthermore, ch. 9 titled “Conducting Ensemble Sequences” recognizes a distinction between a gerund phrase, neither hearing nor not-hearing a thing or things, and a universal quantification: whatever x may be, it is neither hearing a thing or things nor not hearing them, formed by joint denial of the sentence, ‘ Hx ’ symbolizes hearing a thing or things, and the sentence, ‘ $\sim Hx$ ’ symbolizes not-hearing a thing or things. Ch. 9 also recognizes a distinction between a pronominal phrase, it is either not heard or else not unheard, and an existential quantification, there is something which is either not heard or else not unheard, formed by alternative denial of the sentence, ‘ Hx ’ symbolizes a thing or things heard.

The universal quantification is $(x)(x \in \{x: Hx \downarrow \sim Hx\})$, and the existential quantification is $(\exists x)(x \in \{x: Hx \mid \sim Hx\})$. Neither of these two quantifications illustrates the Russell paradox

that a class is a member of itself if and only if it isn't. For the joint denial symbol '↓' is not the bi-conditional symbol '≡', and the alternative denial symbol '↓' is not the disjunction symbol '∨'.

23 DEC 05. THE FOLLOWING PASSAGE IN 10 POINT WAS MOVED HERE

the line of reasoning about rhythm and meter which runs from Messiaen through Cooper and Meyer to Kramer and Hasty. For Formula 3.1 *implies truth-functionally* that there is a null relation between auditory observing and auditory oblivion: the two are related by a spatio-temporal point of no spatio-temporal extent. This is a concept adumbrated by these widely respected scholars, even though it isn't explicit in their work. I could never have recognized this relation, had I not studied their books.

Now, Formula 3.1 is assigned the truth-table FF — false in all situations. Thus it resembles the 3rd premise of Formula 2, being incapable itself of enabling any conclusion to be deduced from truth-conditional premises (auditory observing and auditory oblivion). In order to draw a conclusion from these premises, Formula 3.2 is introduced. Formula 3.2 implies truth-functionally that there is a null function from auditory observing to auditory oblivion. The arguments of this function are connecting instants in individual situations, such as a barline in an ametrical composition by Messiaen or a legato connection from moment a_0 to moment b_0 in the *taqsim* in *Maqam Nahawand* analyzed by Jay Rahn. Conventional concepts of rhythm and meter, such as full beats (rather than beat points), are 6-place relations and functions which can be deduced from the 3-place ones.

Thus, to give a third example, Formula 6.1 $(\exists x)(x \in \{S, \$\})$ — which can be read as: some physical actions x belong to an exclusive temporal position (sounding excludes silence or else silence excludes sounding) — is deduced from Formula 3.1 $(x)(x \in \{S/\$/\})$. Formula 6.1 is assigned the truth-table TT, true in all situations, because its truth-table is the dual of the truth-table assigned to Formula 3.1 FF, false in all situations.

To give a fourth example, Formula 6.3 $(\exists x)(x \in \langle S, \$ \rangle)$ is distinguished from Formula 3.2 $(x)(x = S/S/S)$. The distinction is truth-functional because the truth-table assigned to Formula 3.2 is FT, whereas the truth-table assigned to Formula 6.3 is FF. For Formula 3.2 assigns FT to an instant connecting a set of sounding things to a set of silent things (often called confusingly in English “beat point”), whereas Formula 6.3 assigns FF to an *ordered* pair of instants limiting a temporal position *extent* (an ordered pair often called confusingly in English “beat”, in German “Takt”, in Hindustani “anudrutam”, and so on).

28. The remaining creative exercises are:

5th notate conducted seq of 2 occs in following succ: $x \in \{S/\$ \}$

6th $x \in \{\$/S \}$

notate a conducted iterate of 2 occs in following succ: $x \in \{S/S \}$ Also $\{\$/\$ \}$ Thus distinguish itr
from seq

Revise numbering

7th $\{S/\$/S \}$

8th $\{S/S/\$ \}$

9th $\{\$/\$/S \}$

10th $\{\$/S/\$ \}$

11th $\{S/\$/\$ \}$

12th $\{\$/S/S \}$

13th $\{S/S/S \}$

14th $\{\$/\$/\$ \}$

assignment: notate 4-occ seq in 12 diff successions.

29. CUT AND PASTE IN INTRO TO VOLUME II

See, e.g., Bell Yung, ed., *Celestial Airts of Antiquity* (Madison, Wis.: A-R Editions, 1997)

30. CUT AND PASTE IN INTRO TO VOLUME II

Cp. W. V. Quine, rev. ed., *Set Theory and Its Logic* (Cambridge: Harvard UP, 1969) ch. 4

“Natural numbers”, sec. 11 “Numbers construed”, pp. 79-80 on iterates and sequences.

31. NOTE TO MYSELF 25 OCT 05: DON'T DELETE ANY MATERIAL APPENDED AT THE END OF THESE ENDNOTES, UNTIL I HAVE ALL THE ENDNOTES IN GOOD ORDER.

THE FOLLOWING MATERIAL MAY BE USEFUL IN CHAPTER 9. To give the reader some sense of where this methodology will lead, I briefly summarize a fundamental concept of the world's music which will be derived subsequently. The derivation is made at length in the chapters of volume II, but I can summarize it as follows, speaking somewhat informally, as a classroom teacher might.

“There's a difference between an ordered pair in mathematician's language and an ordered pair in music scholars' language. An ordered pair in mathematician's language is a set of four individuals: x , y , z , and w , such that x is related to z by the identity relation between points, and y is related to w by the identity relation between points. The points can be anything you please. An ordered pair in music scholars' language is a set of four individuals: x , y , z , and w , such that x is related to z by the identity relation between points, and y is related to w by the identity relation between points. So far, no difference.

“Now, the difference is this: in music the points *cannot* be anything you please. They must be temporal positions of temporal extents. If $x = z$, the points are, respectively, the temporal position and its unit class. If $y = w$, the points are, respectively, the temporal extent and

its unit class. To be precise, the open sentence ' $x \in \{\langle x, z \rangle : x = z\}$ ' symbolizes a temporal position, whereas the open sentence ' $y \in \{\langle y, w \rangle : y = w\}$ ' symbolizes a temporal extent.

“When the two different sentences symbolize *any one* performance of an instant, then their symbolizing is identical: one instant occurrence is the same as another. However, when the two different sentences symbolize *just one* performance of an instant, then their symbolizing is indexical: one instant occurrence differs from another.

“For this reason, the ordered pair $\langle x, y \rangle$ is ordered by occurrence identity when notated but ordered by occurrence indexicality when performed. Since a 0-place iterate of a 1-place iterate is a finite occurrence sequence, this sequence is an ordered pair. The concept of an ordered pair as a relation between 0 and 1 is a concept well-suited to computer music programming, since computer programming can reduce sequences to ones and zeros.

“Notice carefully, however, that this concept of a temporal sequence (not just a numerical sequence) applies to musical structure without making any aesthetic judgment. A sequence of temporal extents conditional on temporal positions may be judged beautiful or ugly, serious or frivolous, profound or shallow, emotional or serene, and so on, but such aesthetic judgments cannot be reduced to computer science.”

THE FOLLOWING MATERIAL WAS ORIGINALLY IN SECTION V, BUT IT WAS TOO LENGTHY. PERHAPS IT CAN BE DISTRIBUTED TO INDIVIDUAL CHAPTERS AS INTRODUCTORY MATERIAL FOR EACH.

My first proposal to solve problems encountered in formulating fundamental concepts of the whole world's music is to heed the call for curriculum reform officially endorsed by music scholars and music educators in the United States during the last quarter of the 20th century.

Chapter 1 points out that the 1970's Comprehensive Musicianship Project and the 1990's National Standards called for broadening the curriculum from a Eurocentric view of music to a global view, as well as broadening classroom instruction to include composing and performing of music as well as listening to music. The chapter points out that the language used by music scholars and music educators throughout the world is a unique kind of language, an LM (language mix), in that it mixes together technical language and natural language, whether the natural language is English or some other.

My second proposal to solve problems encountered in formulating concepts of the whole world's music is to expose the inadequacy of the LM (language mix). Chapter 2 points out that the LM is incapable of explaining what we music scholars and music educators are talking about, because it cannot identify the universe of discourse about which we talk. The LM lacks extensional identity. Drastic reform is needed.

My third proposal to solve problems encountered in formulating fundamental concepts of the whole world's music is to introduce an innovative method of inquiry, the method of conceptual deduction (mentioned in the Preface and in section III *supra*). Chapter 3 points out that drastic consequences result from adopting this method: the very concept of negation is re-formulated, to begin with, enabling negation of a previous concept to become deduction of a new concept.

My fourth proposal to solve problems encountered in formulating fundamental concepts of the whole world's music is to apply the method of conceptual deduction to a single field of scholarship, namely music scholarship (broadly conceived, as stated in the Preface *supra*). The primary formula of the infinite algorithm (briefly alluded to in section IV *supra*) from which all

other formulas are derived is an assumption which is assumed intuitively without being deduced from any prior assumption. This first formula assumes that hearing has something to do with music.

FROM HERE ON THIS IS CONFUSED. Conceptualized, the assumption is that the letter ‘H’, an abbreviation of ‘hearing’, is a symbol which symbolizes hearing a thing or things. Formula 1: ‘H’ sym Hx. The second formula of the infinite algorithm is the negation of the first, derived by conceptual deduction: hearing a thing or things neither in one situation nor another is not hearing a thing or things. Formula 2: $\sim(x)(\text{‘Hx’ sym Hx})$.

My fifth proposal to solve problems encountered in formulating fundamental concepts of the whole world’s music is to apply to music scholars’ sentences the well-known semantic distinction between *reference* and *meaning*. What music scholars’ sentences refer to is neither hearing a thing or things nor not hearing a thing or things but rather to a null spatio-temporal extent between them. Formula 3.1: $(x)(y \in \{x:\text{‘Hx’ sym Hx}\}) \downarrow \sim(x)(y \in \{x:\text{‘Hx’ sym Hx}\})$. However, what music scholars’ sentences mean is a spatio-temporal instant connecting them. Formula 3.2: $(x)(y \in \{x:\text{‘Hx’ sym Hx}\}) \mid \sim(x)(y \in \{x:\text{‘Hx’ sym Hx}\})$.

My sixth proposal to solve problems encountered in formulating fundamental concepts of the whole world’s music is to address a question in music perception: is silence the not hearing of things or is silence the things unheard? Chapter 6 explains that John Cage and Peter Strawson both failed to find an answer, because they were unable to relate exemplifying a sentence letter, such as p, to quantifying over a predicate variable, such as x. Formula 6.1: $(\lambda x)(y \in \{S,\$ \})$.

My seventh proposal to solve problems encountered in formulating fundamental concepts of the whole world’s music is to address a topic familiar in 20th-century aesthetics: the ontology

of music. Widespread controversy has arisen over a question in aesthetics: is there any difference between actions of objects which are quotidian and those which are musical? Chapter 7 explains that the ontic status of music is identified by function abstraction from physical actions of physical objects to musical performances of musical instruments. Formula 6.2: $(\exists x)(y = \{S, \$\})$. The ontic status of music is not an aesthetic judgment of music. The ontic status of music is a set-theoretic concept of a musical individual, whereas an aesthetic judgment of music is a pragmatic concept of a musical individual. The pragmatic concept is deduced in volume II, chapter 12.

My eighth proposal to solve problems encountered in formulating fundamental concepts of the whole world's music is to formulate a concept of notation which applies *alike* to all historical eras and cultural traditions but doesn't abandon traditional music notations, which apply *exclusively* to one or another historical era or cultural tradition. Chapter 8 explains that the object language *is* music notation. For example, $/S, \$/$ is deduced from: $(\exists x)(y = \{S, \$\})$.

24 Oct material from section V: Chapter 3 advocates a drastic reform in the semantics of logic and natural language: an innovative method of conceptual inquiry called conceptual deduction. According to this method, the meaning and truth of sentence negation differ in any situation in which a sentence is jointly denied from any situation in which a sentence is alternatively denied. The 20th-century convention has been that there is no such difference.

Chapter 4 applies the method to music scholarship. An individual sentence is proposed, namely: hearing has something to do with music. Its negation is formulated as a truth-functional premise of a deductive argument:

that hearing things is auditory observing in one situation or another implies
that not hearing things is auditory oblivion in an individual situation

This implication is truth-functional because the dual truth-functor, TF, of the implicans corresponds to the dual truth-functor, TF, of the implicandum. The conclusion of the deductive argument is as follows:

not hearing is auditory oblivion in an individual situation.

This conclusion is deduced by the conventional logical rule of detachment. Therefore its dual truth-functor is TF, just as it was before detachment.

Chapter 5 introduces into the inquiry the concept of reference, a concept familiar in philosophy language but not in music scholarship.

Reference by music scholars' sentences is reference from auditory observing or auditory oblivion to a set of things neither observed nor not observed, namely a null spatio-temporal point. This reference is made by conceptual deduction. It is bi-conditionally false, being false only if a spatial point lacks spatial extent and only if a temporal point lacks temporal extent. Thus, the bi-valence of the truth-functor implication is FF.

Succinctly, in the meta-language:

$$\begin{array}{c}
 \text{F} \qquad \qquad \qquad \text{F} \qquad \qquad \qquad \text{F} \qquad \qquad \qquad \text{F} \\
 \text{3.1} \quad p \downarrow p \downarrow p \quad _ \quad [\sim_{\text{idv}} p] \\
 \text{and in the object language:}
 \end{array}$$

$$\begin{array}{c}
 \text{F} \qquad \qquad \qquad \text{F} \qquad \qquad \qquad \text{F} \qquad \qquad \qquad \text{F} \\
 \text{3.1} \quad 'Hx' \text{ sym } Hx \downarrow 'Hx' \text{ sym } Hx \downarrow 'Hx' \text{ sym } Hx \quad _ \quad \sim(x)(x \in \{x:Hx\} \downarrow x \in \{x:\sim Hx\}) \\
 \text{The truth-functors correspond, but the conclusion of the deductive argument is invalid, since a sentence false in every situation is not true in an individual situation.}
 \end{array}$$

This conclusion is deduced from the joint denial of a sentence. A different conclusion is deduced from the alternative denial of a sentence. For alternative denial of a sentence is a function from a null spatio-temporal point to a set of arguments which are instants connecting any set of sounding things to any set of silent things immediately. Succinctly, in the meta-language:

$$\begin{array}{c}
 \text{T} \qquad \qquad \qquad \text{F} \quad \text{F} \qquad \qquad \qquad \text{F} \qquad \qquad \qquad \text{F} \qquad \qquad \qquad \text{T} \quad \text{T} \\
 \text{3.2} \quad [p | p | p] \quad _ \quad \text{idv } \sim p \\
 \text{and in the object language:}
 \end{array}$$

$$\begin{array}{c}
 \text{T} \qquad \qquad \qquad \text{F} \quad \text{F} \qquad \qquad \qquad \text{F} \qquad \qquad \qquad \text{F} \qquad \qquad \qquad \text{T} \quad \text{T} \\
 \text{3.2} \quad (x)(x \in S | x \in S | x \in S) \quad _ \quad (x)\sim(x \in S) \\
 \text{The truth-functors correspond, and the conclusion of the deductive argument is valid, since the function identifies set members falsely, whereas the arguments individuate set members truly.}
 \end{array}$$

The summary of Volume I has to be terse for the purposes of an Introduction. Suffice it to say that this summary demonstrates the infinite algorithm of the method of conceptual deduction. The fundamental assumption, that hearing has something to do with music, proceeds from the formulation of Formula 1 (the words 'hearing a thing or things' symbolize actual hearing of a thing or things), TF, through its 2-place negation (not-hearing a thing or things), FT, to its 3-place denial (neither hearing things nor not hearing things but rather things heard or things not heard), FF, and on to its 4-place denial, 5-place denial, ... n-place denial. In short, this monograph is an unending search for the meaning and truth of music scholars' language.

MATERIAL TRANSFERRED FROM 01 NOV VERSION

deduction of a 3-place null relation between sentences follows from a certain premise: neither do things observed auditorily occur nor do things observed non-auditorily occur. This null relation is the joint denial relation between a set of things heard and a set of things not heard such that they don't occur at the same time-place, abbreviated to an unordered pair set {S/\$}.

Another 3-place null relation between sentences follows from another premise: either things observed auditorily occur or else things observed non-auditorily occur. This null relation is the alternative denial relation between a set of things heard and a set of things not heard such that they occur at the same time-place, abbreviated to an ordered pair set $\langle S/\$ \rangle$.

The deduction of a 4-place relation between sentences follows from a certain premise: neither one set of things auditorily observed nor another such set occurs. This null relation is the joint denial relation between one set of things heard and another set of things heard such that they don't occur at the same time-place, abbreviated to an unordered pair set $\{S/S\}$. $\langle S/S \rangle$ similarly.

The deduction of 5-place relations $\{S/\$ \}$ and $\langle S/\$ \rangle$ similarly.

The deduction of a 6-place relation between sentences follows from the premise that the 3-place relation is jointly denied: $\sim(x)(Hx) \downarrow \sim(x)(Hx)$. The valid inference is:

$$\sim(x)(Hx) \downarrow \sim(x)(Hx) \quad _ \quad (Ex)(Hx \mid \sim Hx)$$

The conclusion deduced from this premise is:

Formula 6.1 $\{S,\$ \}$

This relation is the reference relation from null connecting instants to null limiting instants. What is referred to is a temporal position (time at which) such that a pair of temporal limiting instants excludes things heard at one temporal position from things not heard at that same temporal position $\{S,\$ \}$. A temporal position has unspecified temporal extent. Thus, the beginning of $\{S,\$ \}$ is the beginning of what would be called in a European-American context: *tempo ad libitum*.

The joint denial of a temporal position is the reference relation from temporal position to temporal extent (time during which) such that a pair of temporal limiting instants has specified temporal extent $\langle S, \$ \rangle$. Thus, the beginning of $\langle S, \$ \rangle$ is the beginning of what would be called in a European-American context: tempo giusto. The valid inference is:

$$(Ex)(Hx \mid \sim Hx) \quad _ \quad (Ex)(Hx \downarrow \sim Hx)$$

The conclusion deduced is:

Formula 6.3 $\langle S, \$ \rangle$

The 9-place relation referred to is a spatio-temporal location (time-place at which) such that a pair of spatio-temporal limiting instants is non-exclusive: one location of S or \$ is at the same time-place as another $\cup \{S, \$\}$. For example, the second violins are in the same time-place as the first violins, namely on the stage during the concert.

This algorithm of conceptual deduction proceeds *ad infinitum*. In summary, the semantics of music scholarship is an unending search for the meaning and truth of music scholars' sentences.

THE FOLLOWING MATERIAL WAS INSERTED AT THE END OF SECTION IV TEMPORARILY IN EARLY JANUARY 05 BUT BY MID-JANUARY ALREADY REVISED (SAME INSERT TEMPORARILY PLACED IN CHAPTER 4 "HOWTEL"). THIS REVISION WAS SENT TO MY FIVE CHILDREN FOR SAFE-KEEPING WHILE MY COMPUTER AND PRINTER WAS DOWN (LATE JANUARY AND EARLY FEB). FURTHER REVISION OF INTRODUCTION CONTINUED ON HARD DISC AND REVISION OF NATURAL DEDUCTION CONTINUED IN HAND-WRITTEN DRAFTS DURING FEBRUARY AND MARCH

General Principle of algorithm:

after formulas 1 and 2, each joint denial implies a sentence relation, whereas each alternative denial implies a sentence function

For example:

at formula 3.1 the joint denial, $(x)(Hx \downarrow Hx)$, implies the sentence relation, $(x)(\langle x,x \rangle: x \in S \downarrow x \in \$)$, namely
 null spatio-temporal extent;

whereas at formula 3.2 the alternative denial, $(x)(Hx \downarrow Hx \downarrow Hx)$, implies the sentence function

$$(x)(\langle x,x \rangle: x \in S \mid x \in \$)$$

Remarks:

Formula 1, 'Hx' sym Hx, is not a joint denial. It is a replacement sentence for a sentence letter p.

Formula 2, $(\text{'Hx' sym Hx}) \downarrow (\text{'Hx' sym Hx})$, is not an alternative denial. It is a replacement sentence for a sentence
 letter compound, $p \downarrow p$.

Explanation of Implication:

Formula 2 is derived from formula 1 by natural deduction, the derivation being a kind of logical implication by
 quasi-quotation.

Natural Deduction:

Line no.	Line	Logical Semantics Rule	Linguistics Semantics Rule
(1)	$_p$	INTRO	...
(2)	$_p \downarrow p$	INTRO	...
(3)	$_p \mid p$	INTRO	...
(4)	' $p \downarrow p$ ' sym wh-neg p	1, 2	SEMANTIC DESCENT
(5)	' $p \mid p$ ' sym other than wh-neg p	1, 3	SEMANTIC DESCENT
(6)	$\lceil p \downarrow p \rceil$ specifies wh-neg p	1,4	QUASI-QUOTATION
(7)	$\lceil p \mid p \rceil$ $_$ pt-neg p	TAUTOLOGY	QUASI-QUOTATION
(8)	$\lceil p \mid p \rceil$ $_$ $_$ expt-neg p	INDEXICALITY	EXEMPLIFICATION

06 Mar 05 These pages moved here from end of section X. They may be useful in completing chapters still in draft
 form.

XI. Inter-lingual Translation

Conceiving the ontology of music in terms of set theory does not reduce music scholarship simplistically to a branch of mathematics. For mathematics does not address one of the most urgent problems of music scholarship, namely: what is the meaning of music? However, to say that music is meaningful is one thing, whereas to say that music scholars' language is meaningful — this is another thing altogether. This monograph argues that we cannot understand the meaning of music unless we understand the meaning and truth of music scholars' sentences. Now, semantic methods for analyzing the meaning and truth of *natural language sentences* were formulated during the 20th-century, but semantic methods for analyzing the meaning and truth of *music scholars' sentences* were not. We can take a first step toward analyzing the meaning and truth of music scholars' sentences by scrutinizing the part-whole distinction in the world's music. Fundamental concepts of the *whole* world's music are not fundamental concepts of one or another *part* of the whole world's music, such as one part which consists of music in diverse historical eras and cultural traditions of India or another part which consists of music in diverse historical eras and cultural traditions of China, and so on. Nevertheless, to remark pedantically that the whole is the sum of its parts would be to miss the point.

The point is semantic: concepts of one or another part of the whole world's music which have been formulated at diverse times and places in diverse natural languages are not part of a single natural language. For example, the English word 'mode' is not part of the Sanskrit language, which uses a word similar in meaning: 'raga'. For another example, the words in the English language 'hearing a thing or things' are not part of the Arabic language, which uses some words similar in meaning: 'hal asma shaeen'. For another example, the words 'hearing a thing or things' in the English language are not part of the Chinese language, which uses some words similar in meaning: 't_ng dào y_ gè huò j_ gè sh_ ng y_ '. For this reason, inter-lingual translation isn't translation of part to whole, or vice versa: it is translation from part to part. Thus, inter-lingual translation does not yield any concept of the whole world's music.

Inter-lingual translation deals with word meanings, and, as we all know only too well, word meanings are notoriously difficult to translate, especially if we accept approximate translation under the illusion that it clarifies something at least. Far from clarifying anything, approximate translation just leads to an antinomy over similarity of meaning (intuitive similarity vs. conceptual similarity), as I pointed out in section I *supra*.

Tarski's 1936 distinction between meta-language and object language does not end controversies over inter-lingual translation. Indeed, as Davidson points out, Tarski "does not define the concept of translation". Nevertheless, Tarski's distinction enables us to proceed in a new direction. Since 1936, philosophy of language has made a notable advance by distinguishing language meaning from language referring. The *locus classicus* was W. V. Quine, *Word and Object*. Subsequently, an apparent gap between linguistics and logic was bridged by the development of linguistic semantics, led notably by Montague and Davidson.

In philosophy of language the meaning of *words* is distinguished from the referring of *sentences* thus: although *word meaning* makes no assertion about the world, yet *sentence referring* does. We can take advantage of this distinction to formulate sentences in music scholar's language which serve as world music notation symbols. Such sentences replace inter-lingual translation of sentences about the world's music. Chapter 8 explains.

XII. Model-theoretic Pluralism Rejected

I certainly do not suggest that music scholarship can be reduced to philosophy of language. I must say that we tend to be bullied by scholars in other disciplines, notably philosophy, cognitive science, perceptual psychology, anthropology, and sociology, who in an astonishing mixture of innocence and arrogance say things like: "Oh, just give us your fundamental concepts and we can straighten out your confused reasoning for you".

I readily admit that confusion infects our reasoning. It is due only partly to the three antinomies — exclusion vs. inclusion, negation vs. assertion, and intuition vs. conceptualization — which I pointed out in section I *supra*. It is also due partly to the fact that we confuse fundamental concepts of the world's music with fundamental concepts of other scholarly disciplines. For example, temporal relations in music are apt to be confused with event succession in philosophy of science; pitches in music, such as a', are apt to be confused with empirical concepts in physiology, psychology, and acoustics, such as 440 Hz, 435 Hz, and 415 Hz; silences in music are apt to be confused with negative entities in metaphysics, such as absences; and musical meaning is apt to be confused with signifying in semiotics. I say to scholars in other academic disciplines: "Thank you very much for offering to talk about music in your own kind of scholarly language, which is often helpful, but we music scholars need to undertake a drastic reform of our own kind of scholarly language."

The most important respect in which this monograph asserts the independence of music scholarship as a discipline in its own right is this: the method of reasoning adopted herein is exempt from certain constraints on methods of

reasoning proposed in the 20th century. Whitehead and Russell demonstrated at the beginning of the century that mathematics could be formalized systematically in terms of quantification theory. Their work led scholars to explore the possibility that not only mathematics but also other scholarly disciplines could be formalized systematically in terms of quantification theory. This exploration, in turn, led to the development of models of formal systems. The problem of theory proliferation then emerged: although there can be only one model per theory, yet there can be many different models for many different theories. Accordingly, certain constraints on methods of reasoning were proposed to combat the chaos of “anything goes”. Some of them were: explanatory adequacy, ontological relativity, empirical falsifiability, and rightness of rendering. Of course, under the influence of post-modernism, the term ‘anything goes’ became in the last quarter of the 20th century a term of praise rather than opprobrium. Lyotard in his seminal report on post-modernism reduced logical contradictions to language differences — on the methodological grounds that language games are a method of reasoning.

This monograph regards both the truth-table decision method of logical implication (which imposes restraints on philosophy of science) and the language game method (which imposes restraints on the epistemology of post-modernism) as inadequate for the present purpose: formulating fundamental concepts of the world’s music. In the first place, since a unique, original object language of music scholars is about the world’s music not about the world in general, constraints on methods of reasoning which are about the world in general don’t apply *mutatis mutandis* to methods of reasoning which are not about the world in general. In the second place, model-theoretic pluralism in a single field of scholarship is rejected. It is replaced by a single object language.

02 JAN 06 THESE TWO SENTENCES ARE WRONG. For example, in the single field of music scholarship, the meta-language quantifies over a *single* domain of physical actions of physical objects, heard or unheard, whereas the object language quantifies over *mutually exclusive* predicate domains of that quantificational domain.

THE META-LANGUAGE USES $(x)(Fx)$, WHEREAS THE OBJECT LANGUAGE USES $(x)(‘Hx’ \text{ sym } Hx)$. THE QUANTIFICATIONAL DOMAIN AND THE PREDICATE DOMAIN ARE BOTH IN THE OBJECT LANGUAGE.

RESUME ORIGINAL TEXT FROM 1990'S. The reason why the object language of music scholarship is not a model theory, then, is that the object language is not a single domain of individuals. In other words, the truth-functional distinction between the meta-language of music scholarship and the object language of music scholarship is the distinction between truth in a model and truth in a natural language.

24 Apr 05. These pages moved here from end of section IX. They may be used elsewhere in this Intro, but probably they will turn out to be useful in other chapters still in draft form.

As for the second primary assumption, it is this: any sentence can be negated by jointly denying or alternatively denying it. Various senses in which the primary sentence concept is denied are distinguished from a particular sense in which it is negated, as illustrated by Formulas 2, 3.1, and 3.2 *supra*. Adopting this second assumption enables us to penetrate the thicket of controversies surrounding the topic of silence, examples of which can be found in writers as diverse as Augustine (4th-century AD), Gange_a (12th-century AD), and Cage and Strawson (20th-century AD). Not hearing a thing or things is due to distance, deafness, distraction, and other such reasons. Auditory oblivion is not a kind of perceiving, then. On the contrary, auditory oblivion is a kind of not-perceiving. What is not perceived auditorily is some physical actions of physical objects which are not heard. The shift from 'not-hearing' to 'not heard' is the shift from sentence negation in the propositional calculus to predicate negation in the predicate calculus.

13 May 05. Section VII moved here

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FOLLOWING PARAGRAPH COULD BE WORKED INTO THE INTRO TO VOLUME II

VII. How To Begin

Teaching "fundamentals" to non-musicians has achieved the dubious status of "kiddie music" in the view of many music scholars. In an effort to combat this mis-perception, music educators in Europe and the Americas typically adopt pedagogical methods (such as those of Orff or Kodaly) which take for granted that the so-called "fundamentals" are fundamental concepts of European music, such as time signatures, scales, and chords. As well-intentioned as these pedagogical methods are, it must be pointed out forthrightly that for the purpose of teaching fundamental concepts of the world's music such methods are a recipe for disaster.

What? Fundamental concepts of the world's music exclude time signatures, scales, and chords? Certainly not. It's just that time signatures, scales, and chords are not fundamental concepts of the world's music which are *primary*. Rather, they are fundamental concepts of the world's music which are *derivative*. For they evolved unsystematically in various historical eras and

cultural traditions of Europe, just as other fundamental concepts of the world's music which are derivative evolved unsystematically in various historical eras and cultural traditions of Africa or Asia or the Middle East or Polynesia or other historico-cultural contexts. No unsystematic evolution of fundamental concepts of the world's music is a systematic derivation of fundamental concepts of the world's music.

Primary fundamental concepts of the world's music have been formulated rarely, if ever, to the best of my knowledge. There is no concept of *jawari strings* or *t_nt_l* in a Zoltan Kodaly textbook, just as there is no concept of a chord or a time signature in a Purandara Dasa textbook. [Endnote 10. "The systematic approach to learning music apparently originated in one man, Purandara Dasa (1484-1564), who was accordingly dubbed the 'father of Karnatak music'. Purandara Dasa devised graded exercises (*alank_ra*) for practicing *r_ga* and *t_la*, and he composed many songs specifically for learning purposes." Bonnie Wade, *Music in India: the Classical Traditions* (Englewood Cliffs, N.J.: Prentice-Hall, 1979), p. 25.]

Any attempt to establish one-one correspondence between such terms by inter-lingual translation results in confusion, as I pointed out in various sections of this Introduction, notably at the very beginning of Section I (the contradiction between *conceptual* similarity and *intuitive* similarity) and in Section V (the failure to distinguish music scholars' single language, the LM, from music scholars' various natural languages). For this reason a Eurocentric reduction of fundamental concepts of the world's music is a dumb-down, just as an African or Asian or Polynesian or Middle Eastern reduction would be. [Endnote 11. Augustine: appended hard copy; may be on disk saved earlier.] [Endnote 12. Gangesa: Appended hard copy; may be on disk saved earlier.] [Endnote 13. Cage and Strawson: Appended hard copy; may be on disk saved earlier.]