

## Varieties of Musicological Empiricism

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**ABSTRACT:** Empiricism should not be seen to provide an overarching criterion of meaningfulness for musicological concepts nor a single comprehensive methodology for music research. Understood as methodological concern with observation (perception, experience, etc.), it is rather a possible orientation that may receive various degrees of emphasis. Empiricism is not opposed to theoretical systematization, but it can rather be seen as an inclination towards theories which are capable of empirical adequacy. The empirical, or observational component of research may nevertheless be understood in slightly different ways, depending on whether there is only one observer (or many), and depending on whether the observations are treated as falling within a single category (or not). It is argued that either the observer or the observational category has to be assumed constant in order that the research may be called truly empirical. It is also argued that such decisions concerning empirical methodology naturally correspond to distinctions between subdisciplines of empirical musicology, each of them associated with different research interests. Three such orientations are discussed: historico-analytical empiricism, psychological empiricism, and systematic empiricism.

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### EMPIRICISM: A CRITERION OR A METHOD?

WHAT is empirical musicology? Confronted with such a question, one immediately recalls the traditional formulations of empiricism that stress the importance of experience, observation, or perception as opposed to abstract reason as a basis for human knowledge at large. It is clear that within a relatively narrow discipline such as musicology such fundamental epistemological questions often have to be bypassed in order to get the research going in the first place. A music analyst, for instance, has to assume that his or her sense perception of the musical score is reliable enough to provide an “empirical” basis for the analysis. In the simple sense of relying on observation, the bulk of musicology can thus be seen to have an empirical component. Nevertheless, even if we settle on a view that emphasizes observation, perception or experience, it is much more difficult to be more precise about the principles for an expressly empirical musicology than to give examples of *non*-empirical fields of musicological study. Let us first look at some examples of this kind.

First of all, the demarcation between the empirical and the non-empirical may obviously be done with reference to research methodology. For example, thought experiments provide us with scientific understanding without new empirical input and possibly without any empirical input at all (Brown, 1992). More generally, reliance on intuition is clearly a non-empirical basis for scientific research. To take an example of such demarcation from a discipline not too far removed from musicology, empirical linguistics differs from mainstream generative linguistics in its rejection of linguistic intuitions as a viable form of evidence for the grammaticality of linguistic utterances (Sampson, 2001, 122-140). By analogy, a musical empiricist might disallow a discipline such as the traditional theory of tonal harmony on the grounds that it is arguably based, in part, on intuitions concerning what is “musically grammatical”. This would be not to deny that we may entertain a host of valuable intuitions about tonal harmony that may guide us with dealing with the music. The point is rather that some of our harmonic intuitions may not stand empirical scrutiny and they should not therefore be taken as scientific evidence. It is conceivable that we cannot always be sure as to the origins of our intuitions concerning temporally distant harmonic styles: are these intuitions based on our experience with the music within these styles, or are they based on (possibly defective) scholarly descriptions of this music, or perhaps on our experience in learning to write harmony exercises according to these descriptions? A simple illustration is provided by de la Motte’s (1976, 42-44) discussion of doublings in four-part chorale texture of the baroque period. By simply calculating the frequencies of different doublings, de la Motte suggested that certain principles of earlier harmony

textbooks (e.g., that the third should not generally be doubled in triads) are not appropriate to Bach's and Handel's period. As this example shows, it may be premature to stigmatize certain areas of musical thought as non-empirical only on the basis that they have historically been based on intuitive arguments. Empirical reformations within these areas may well be possible.

On the other hand, certain areas of inquiry seem to repel such reformative attempts, making them inherently unsuited to empirical study. For example, it seems that *values* are something that cannot be observed or inferred from observational data (Rescher, 1997, 195). Accordingly, it would perhaps be appropriate to rule out of the field of empirical musicology any research traditions that explicitly take a stand on values—traditional music criticism or contemporary feminist musicology come to mind as possible outliers. Of course, there is no reason why axiological questions could not form the *subject matter* of an empirically oriented musicological study, e.g., in studies of listeners' "liking" for various types of music (North, Hargreaves, & Hargreaves, 2004; Orr & Ohlsson, 2005). One may also grant the commonplace notion that the acceptance of a certain methodology and the acceptance of an object of study may be to some extent value-laden. What seems inappropriate, however, is to use the term "empirical" in connection with such studies in which the whole research programme is directed towards evaluative goals. According to common sense, it does not seem impossible to roughly differentiate such value-oriented research agendas from any (possibly empirical) traditions which are trivially committed to certain values from the outset, e.g., by deciding to study the music of a particular tradition.

Some philosophers speak of philosophical relativity in cases where there is no "fact of the matter" to decide between two theories (see Unger, 1984). Empirical orientation in musicology as well as in other disciplines may be understood to imply an attempt to avoid questions for which there is no "fact of the matter" that could decide between the alternative responses. Some forms of semiotic music analysis provide an example of markedly non-empirical research in this sense: sometimes, there may simply be no empirical fact whatsoever that could possibly refute a clever semiotic interpretation of a musical work. Here as in the other examples mentioned above, pointing to non-empirical fields of study in order to demarcate empirical musicology from them is related, in spirit, to the logical positivists' verificationist criterion of meaning. Hempel (1959, 108-109), for instance, formulated this well-known idea by saying that non-analytic sentences which were not capable of experiential test would "assert nothing", and would therefore "have no explanatory or predictive power whatsoever". Empiricism is here understood to provide a criterion for the cognitive meaningfulness of sentences. Perhaps an empirical musicologist should not go quite so far as to claim that non-empirical research is cognitively meaningless. Still, as the above examples purport to demonstrate, an analogous strategy might be applied, accepting empirical verification as a criterion of scientific rigor.

Such a strategy is put to doubt, however, by asking whether we should consequently take all logically or mathematically oriented research as non-scientific. The central ideal of empiricism—the reliance on observation—implies that empirical knowledge has to be *contingent*, that is, non-necessary. Consequently, we are in a position to rule out of strictly empirical musicology some areas of research that deal with the properties of formal systems. For instance, knowledge concerning the formal properties of scales (and likewise of pitch-class sets, tuning systems etc.) is not empirical, because it is not contingent. Even if they need to be pointed out or "discovered", properties such as "uniqueness" (of the intervallic relations of each pitch element of a scale; Balzano, 1982), could not have been otherwise, given the pitches of the scale. What remains contingent, and thus within the scope of empirical study is how such non-empirical facts possibly affect the perception and production of music. For instance, many empirical researchers have taken the "uniqueness" property of the diatonic scale as a central factor in explaining the perception of tonal centricity (reviewed in Huovinen, 2002, 15-23). In any case, the example of mathematically oriented music theory suggests that there are strictly non-empirical "facts of the matter" about music that even a hard-boiled empiricist may not wish to renounce as unworthy of scholarly study. Accordingly, empirical verification should not be elevated to the status of an overall criterion of meaningfulness or musicological rigor.

The logical positivists' interpretation of empiricism is not the only possible one, however. Instead of assuming that empiricism provides a criterion of meaningfulness, one might understand it as a comprehensive method that should be applied to account for whatever concepts we deem important. This can also be demonstrated by an analogy with philosophy. Within the philosophy of psychology, Prinz (2002) has lately defended a version of concept empiricism in which he basically accepts many of our more abstract concepts as meaningful and attempts to present an account of how these concepts come to be formed on the basis of perceptual representations. Some of our concepts designate unobservables (e.g., CAUSATION, ELECTRON), some are "lofty and intangible" (e.g., TRUTH, DEMOCRACY), and some belong to formal systems (e.g., QUANTIFICATION, NEGATION). For Prinz (2002, 166), the conclusion that such concepts would be beyond our grasp is unacceptable, and thus he

attempts to tackle even these problematic cases with his empiricist tools, proposing a theory according to which concepts are mental representations that are derived from perceptual primitives.

Without going further into Prinz's theory, we may note that a roughly similar strategy might also be available for the empirical musicologist. Consider terms such as "tonality" or "prolongation", for instance. Following the verificationist strategy, one would perhaps have to conclude that sentences including such terms are cognitively meaningless, because they cannot directly be put to empirical test, and they are thus not proper objects of study for a truly empirical musicology. (Of course, one could still accept that they are important for musical aesthetics or some other subfield of musicology which would thereby be understood as non-empirical.) However, another way of approaching the issue would be just to assume the cognitive meaningfulness of the sentences in question and to use empirical methodology in order to understand them better. Indeed, many experimental music-psychological studies can be understood in this sense as attempts to clarify musical concepts (e.g., METER, TONALITY) that we intuitively treat as cognitively meaningful. In qualitative research paradigms, the purpose may likewise be to approach a given musical term from the point of view of how it figures in informants' experience. In her study of students' understanding of the term "musician", Pitts (2002, 76-77) states that "only by looking beyond generalisations to focus on the experience and beliefs of particular individuals can we come closer to understanding what being a musician—whatever that turns out to mean—involves."

The philosophical analogies provide good starting points for our discussion, but they do not necessarily provide the best model of empiricism for musicology. There is, for instance, a venerable tradition of musical scientists and musicologists who have insisted on empirical foundations for their theoretical systems, but have nevertheless openly incorporated various "top-down" principles in them, as well. The ancient Greek music theorist Aristoxenus, who may reasonably be held as the father of empirical music research, is famous for his opposition to Pythagorean rationalism and his emphasis on perception, but this is only one half of the story. Actually, he insisted on the *co-operation* of perception and reason (see below). Similarly, in 1878, the "Weg von Unten" provided by Gustav Fechner's (1876) empirical aesthetics was a model for the work of the young Hugo Riemann (1967, 46-55), but in Riemann's later hierarchical view of musicology the autonomous "logical functions" of musical aesthetics could not any more be derived in a "bottom-up" manner from acoustics or *Tonpsychologie* (see, e.g., Riemann, 1914, 7). Such historical examples could be multiplied. For a present-day musicologist, they suggest that empiricism should perhaps be seen to provide neither an all-embracing criterion of meaningfulness nor a comprehensive method. Rather, empiricism should be seen as a possible orientation that can be given a more or less prominent role in the making of a musicological research programme (cf. Cook & Clarke, 2004, 3). Apart from various degrees of emphasis, the empirical orientation may also receive rather different formulations in various subdisciplines of musicology. Let us next take a look at some of the most characteristic ones.

### PRELIMINARY DISTINCTIONS

The reliance on experience or observation that empiricism requires can be transformed into a research strategy in many slightly different ways. The classical British empiricists' emphasis on the experience of a particular observer is carried further in empirical approaches to historiography and its related disciplines. If knowledge is taken to come from experience, knowledge of the past is acquired by indirect experience of it via the physical remains of the past (Davies, 2003, 28). For the historian, then, following the empirical method means studying the primary sources in order to narrow the gap between the researcher and the historical event. In his book *Empiricism and History*, Stephen Davies (2003) generally stresses two factors in the empirical method. The first is an emphasis on *particular facts* over and above general concepts or claims (*ibid.*, 31 and *passim*), and a related tendency towards nominalism. For the empirical historian, abstract terms such as "class" or "feudalism" do not refer to any real entities but are only shorthand ways of referring to groups of individuals or sets of particular facts (cf. *ibid.*, 82). The second trait—one that differentiates empirical history from antiquarianism, or mere fact-collecting—is constructing a *narrative* in order to "explain causation through time, how one state of affairs became another" (*ibid.*, 84). It is interesting to notice the role that Davies gives to causal explanations and counterfactuals (*ibid.*, 83) in creating such narratives. According to his account, such non-observable features are endured by the empirical historian as long as one stays on the fact-to-fact level and makes no large-scale structural or teleological explanations. Despite the importance of narrative, the facts are seen as largely independent of it: even if its narrative is challenged by later researchers, a truly empirical work of history may still be valued for the facts that it provides (*ibid.*, 67, 87).

Many of these features are found in the “empirical-positivistic” approach to historical musicology that co-exists alongside a more “theoretical-philosophical” approach (cf. Stanley, 2004). To take a characteristic example, we may consider the field of sketch studies that teaches us “[f]irst of all, a wealth of factual information that is not obtainable in other ways” (Kerman, 1982, 57). Apart from providing us with bewildering amounts of particular facts, however, scholars in this field have often sought to uncover a wider narrative into which the facts could be placed. The first candidate for the carrier of the narrative has usually consisted in the inner workings of a creative mind (see, e.g., Kerman, 1982). Thus, sketch studies may be the optimal field of research for someone that believes in the primacy of “musical thinking” as an object of musicology (cf. Eggebrecht, 1977, 131-151). The characteristic attitude is voiced by William Kinderman (1989, xxi) in his study of Beethoven’s Diabelli-sketches when he says that his intention has been “to inquire not only into what Beethoven did, but why he did it.” That is, not only the facts are interesting, but also their linkages with each other that are approached by reconstructing the thought process of the composer. For the empirical music historian, these linkages are nevertheless particular and contingent ones, not something that could be foreseen by an armchair theorist.

A rather different view of empiricism issues from the natural sciences. Some researchers explicitly characterize *systematic musicology* as an empirically oriented discipline that applies “methods which are paradigmatically exemplified in the natural sciences” (Leman & Schneider, 1997, 22). Rather than speaking of particular “facts”, empirical musicologists in this camp often speak of (quantitative) “data”. Whether or not one wishes to refer to the natural sciences, the quantitative aspect has undoubtedly been an important factor in shaping present-day views of empiricism in systematic musicology. Notably, Nicholas Cook and Eric Clarke (2004, 5) define empirical musicology as “musicology that embodies a principled awareness of both the potential to engage with large bodies of relevant data, and the appropriate methods for achieving this.” Thus, it seems that the distinction between historical and systematic musicology (Adler, 1885; cf. Schneider, 1993) might be drawn with reference to the ways in which empirical observations are integrated into a larger account. As we saw above, the historical empiricist’s main method of achieving a coherent account is the narrative. At the risk of oversimplification, one might now suggest that the systematic brand of empiricism differs from such a qualitative approach, in the main, by using induction as the tool for achieving coherence. For a somewhat more elaborate approach, one could follow Seifert (1993) who suggests the three processes of metrization, objectivation (through computer simulation), and axiomatization for roughly similar purposes.

Whatever strategy one adopts, it may not be immediately clear whether such distinctions between the historical and the systematic have a bearing on the nature of observation itself, that is, on the chief empirical component of our research. Indeed, despite the apparent differences between the fact-oriented historical empiricism and the data-oriented systematic empiricism, they do share one important feature. As far as the primary empirical element of research is concerned, the empiricism of the music historian and that of the systematic musicologist (as briefly outlined above) are similar in the sense that what is typically emphasized is the observation of the *researcher*. The primary sources of the music historian and the appropriately collected data of the systematic musicologist are ways of getting as close as possible to the empirical phenomenon in question. However, one could also understand the closeness to observation or experience as a condition of *informants* (or the people that are studied) rather than one of the researcher. In this manner, Karbusicky (1975, 286) defined the “sounding questionnaire” (a questionnaire incorporating sound examples) as the “methodological main tool of empirical-sociological music research”, because it made the informants’ opinions and attitudes with respect to music more reliable by collecting them directly after *they* had been confronted with the music. Similarly, the psychology of music perception generally follows an empiricist programme in the sense of attempting to get as close as possible to the perceptual experience of the experimental subject. In this sense, the informant-oriented approach appears as a third distinct area of empirical research in musicology.

It might seem, then, that various empirically oriented research agendas could be defined firstly by choosing either an informant-oriented or a researcher-oriented conception of empirical observation and, secondly, by adopting either a qualitative or a quantitative methodology for integrating the empirical observations into a coherent account. The problem with these distinctions is that they still do not give a suitable criterion for distinguishing empirical from non-empirical research. For example, what should we think of an informant-oriented, qualitative approach? Should it be called empirical? Clarke and Cook (2004) do seem to think so, as their introductory book *Empirical Musicology* contains examples of, say, ethnographic interviews. Others would surely disagree. Also in other ways, Clarke and Cook’s book raises questions as to what should be included in empirical musicology and why. For example, in listing various types of empirical data, Cook and Clarke (2004,

13) do not mention results from music-psychological experiments. This is rather surprising, given that music psychology with its related fields must be one of the largest music-related areas of research that nowadays employs large bodies of data. Such an omission cannot be explained by conformance to a researcher-oriented view of empirical observation, because the writers do allow data from interviews, audience questionnaires etc. in their list of empirical data (Cook & Clarke, 2004, 13). Of course, music psychology may have been left out just because it has been extensively documented elsewhere. However, for the purpose of getting a firmer grip on the slippery field of empirical musicology, it would be useful to have a more well-grounded classificatory scheme for differentiating the various strands of empirical research from each other as well as from non-empirical research orientations. Before taking further steps in that direction, however, we first need to take a look at the role of theories in empirical research.

### THE PROBLEM WITH THEORIES

It is interesting to see that the concepts of empiricism and empirical method are often taken to imply an opposition to abstract theorizing. Davies (2003, 102), in his above-mentioned work, states of the economic historian J. H. Clapham that “[w]hile he adopted a rigorously quantitative method, he did not make use of the models of economic theory which he had already criticized elsewhere as ‘empty boxes’ (in the modern vernacular we would speak of a ‘black box’).” From this, Davies simply concludes that Clapham’s work “was therefore highly empirical”. One gets the impression that despite his quantitative method, Clapham is absolved of all blame in the eyes of a true empirical historian because he was wise enough to abstain from excess theoretical abstraction. Similar antitheses between empiricism on the one hand and theory, speculation, or even systematicity on the other, may also be found in musicological writings, with or without value judgements. Thus, the 19th century German music theorist Gottfried Weber (1824, xiii-xiv) famously called for experience and observation as the primary bases of music-theoretical knowledge, objecting to the erection of elaborate scientific *systems* on the basis of observational statements. In Weber’s mind, an empirical orientation in music theory was understood to involve a primary focus on those elements of music that are, in some sense, given to us in our everyday musical activities and musical talk. No external justification for these entities was called for. As Dahlhaus (1984, 95) put it, musicological empiricism of the 19th century thus “freed music theory from problems that it could from then on ignore instead of looking for a solution, without thereby jeopardizing its scientific character”.

Weber’s position is easily overstated by equating the abstinence from comprehensive theoretical systems with a negative attitude towards systematicity or orderliness in general. Thus, the association between “empirical, compositionally oriented brand of theory” and “avoidance of speculative, systematic thought” (Kopp, 2002, 45-46) may also turn against the development of empirical research. In our own time, when music theorists have proposed more abstract theoretical systems that would be capable of empirical testing, some researchers have denied that such systems could be called empirical in the first place. Referring to Lerdahl’s (2001) work, Cook and Clarke (2004, 9) suggest that there is a sense in which such theoretical accounts “are not so much about tonal pitch space and melody, but about their respective theories of tonal pitch space and melody”. According to this general attitude, a discipline such as music theory runs the risk of assuming a non-empirical character by imposing on music new conceptualizations that are not known from common musical experience.

To a remarkable extent, such appeals to common sense and plain observation by modern researchers often retain the spirit of Aristoxenus’ rejection of Pythagorean mathematics in the fourth century BC. When Aristoxenus insisted on the use of both perception and reason (or hearing and intellect) as parts of his method, he assigned distinct tasks to each of them: the task of hearing was to determine the magnitudes of the musical intervals, whereas the intellect was to determine the functions (*dynámeis*) of the notes (*El Harm.* II.33.4–10; Macran, 1902, 124, 189). Broadly similar two-part programmes are still carried out in empirical musicology, with the difference that in music-psychological projects akin to that of Aristoxenus, the use of statistical methods has largely transformed the observational component from a researcher-oriented one into an informant-oriented one. It is easy to imagine a modern equivalent of Aristoxenus’ intervallic research: first, experiments provide the researcher with information concerning intonational judgements of intervals; second, the researcher may draw theoretical conclusions from the results concerning the “functions” of intervals or, in modern terms, the cognitive structures and processes that may give rise to such judgements. What suggests the use of the term “empiricism” in connection with Aristoxenus’ programme as well as

any of its present-day cognates is the straightforward assumption that the observational and the interpretational components can be treated separately.

Of course, relativists and idealists of many persuasions have time and again reminded us of the undeniable fact that our observations are in some sense theory-laden. Ernst Cassirer (1944, 59), to pick just one example, said that the facts of science always imply a theoretical element and that “[m]any, if not most, of the scientific facts which have changed the whole course of the history of science have been hypothetical facts before they became observable facts.” Accordingly, empirical research presupposes concepts that may be comparable to Kantian categories (cf. König, 1967, 4). For such critics of direct observation, hostility towards theories may thus appear as utter simple-mindedness.

However, it is possible that some empirically oriented researchers are willing to bite the bullet, accepting the theory-ladenness of observation but denying that it constitutes a great threat to empirical research. One musicologist who has recently touched the issue is Clarke (2004, 92), for whom quantitative methods are preferable to qualitative ones on the basis that in quantitative research, it is usually clearer “where the reporting of results stops and interpretation starts”. Clarke nevertheless seems to suggest that this is only one part of the interpretation that is involved, as he contrasts “speculative” qualitative research with the typical situation in quantitative methods, in which “the interpretative assumptions [...] have simply become so deeply embedded as to be invisible” (*ibid.*). What is interesting for present purposes is not the opposition between quantitative and qualitative methods as such, but rather Clarke’s preference for built-in interpretative assumptions that have become invisible. A favourable reading of this could refer to Kuhnian ideas of normal science in which each researcher within the paradigm does not need to make all of the decisions by him- or herself—following a ready-made method is often enough. A less favourable view could understand Clarke as saying that it does not matter if our observations are theory-laden as long as there is enough consensus among the researchers so that we don’t have to think about it.

One could also imagine more subtle ways of reconciling the idea of theory-ladenness with empirical research. In his work on empirical sociology, Ray Pawson (1989) has argued for a type of social research that is based on empirical measurement but still sees such things as measurement scales fully dependent on theoretical discourse. What this results in is a type of *empirical* research programme that is nevertheless, as Pawson puts it, non-*empiricist* in the sense that it rejects any ideas of direct observation of objects in the world. The moral is that our measurement and experimentation cannot have a firm basis if we do not let our theories systematically guide our observations, or if we believe that interpretation starts only after the data have been collected. The importance of theoretical conceptualization does not mean, however, that we should discard ordinary language altogether in music research as some proponents of musicological empiricism have claimed (McLarty & Braun, 1990). The point is rather to recognize the simple fact that our scholarly observations are necessarily carried out under the influence of categorical schemes. Accordingly, empirical musicology needs to be built on a basis that neither dismisses systematic theories out of hand nor treats theoretical conceptualization as a separate component that only makes its mark after the observational stage.

## EMPIRICAL THEORIES IN MUSICOLOGY

In the philosophy of science, the issue of empirical research is indeed intimately tied to the question of *empirical theories*. Popper (1969, 83-85), for instance, would have said that we should be primarily interested in the empirical content of our theoretical claims. And in fact, the empirical character of musical theories has long been understood by some musical thinkers. Jean-Philippe Rameau (171, 140), for example, stated that “as long as experience does not contradict what reason authorizes, the latter should prevail” (cf. Christensen 1993, 31-35). In other words, Rameau seems to say that our theories remain in force as long as they are not refuted by empirical evidence. Such a general view sees empirical observations as a way of testing and refuting theoretical claims. This Popperian view of theories is important for the empirical musicologist, because it provides a criterion for what sorts of concepts and theories may be accepted into his or her toolkit.

Empirical theories are also the key to the problem of negative evidence that may, at the first sight, be thought of as fatal to the empiricist. To grasp this problem, consider any categorization that the musicologist might wish to make. When an organologist utters “this is a shamisen”, or when a music historian similarly claims “this composition is in the Italian baroque style”, how can they be sure? Let us say that the objects that these musicologists are studying exhibit some features that are missing from the class of known shamisens or from the class of known compositions of the Italian baroque. The problem is that for the vast majority of objects exemplifying such features (say, electric

guitars or Beatles tunes), we simply lack empirical evidence that would classify them as non-shamisens or as non-Italian-baroque-compositions. How can these objects be refuted as shamisens or as Italian baroque compositions if there is no negative empirical evidence? Within linguistics, similar arguments have been used by the defenders of the position that one should rely on intuitions rather than on empirical evidence for the grammaticality of sentences. How can we classify the linguistic string “and which and and” as ungrammatical if we have never encountered it accompanied by some signs of disapproval?

The empiricists’ reply is the Popperian appeal theories: the empirical linguist needs a grammar—that is, a theory—of the language that defines the narrowest possible range of linguistic strings as grammatical, and in so doing motivates excluding “and which and and” independently of our intuitions (Sampson, 2001, 129-130). By analogy, the organologist may remain an empiricist by relying on the strongest possible taxonomical theory of musical instruments that is available. Such a theory would “predict” the properties of shamisens by seeing the observed properties with reference to a larger framework that renounces other instrument types as shamisens by categorizing them differently. Similarly, an empirical approach to the compositional style of the Italian baroque cannot restrict itself to enumeration and description of the compositions within this single category. In order to tell French baroque compositions from Italian ones, one needs to construct a theory of the Italian style. Such a theory would have to be expressed in general terms that can also be applied to other relevant musical styles. For instance, one would need a theory of harmony that identifies the harmonic means of the Italian composers with reference to a larger set of organizational possibilities—many of which would thereby be seen as non-Italian. But of course, an Italian baroque composition *might* still be highly aberrant with respect to the harmonic means common to other such compositions—a possibility which Huron (2001, 7) calls “intertextual negative presence” of a feature. Thus, in order not to lump harmonically aberrant compositions of the Italian baroque with non-members of the category (Beatles tunes etc.), the theory would have to take into account a variety of other parameters as well.

Some aspects of our theory concerning the musical style of Italian baroque compositions would surely have to be modified if we suddenly came across a body of music exemplifying previously unknown types of characteristics that nevertheless could be traced back to the Italian baroque. In other words, the inductive claim “all Italian baroque compositions are of the type X” would then be refuted. But what if our theoretical accounts are not of this inductive type but rather of the narrative type, integrating various different sorts of observations into a reasoned story? Can such “theories” still be “refuted”? Are they “empirical theories”? Consider, for instance, the case of Greek syllables TOTH TOTOTE, found beside a figure of a trumpet-blowing boy in a broken clay object from the fifth century BC. Bélis (1984) interpreted these syllables in terms of a solmization system that is known from later literary sources, arriving at a musical transcription of a trumpet call that is playable on a natural trumpet. This, of course, is a narrative explanation: the Greek letters are given a meaning through a story that ascribes an intention to their writer. Such an ascription presupposes a certain account of larger musical practices of fifth-century Greece: one that is committed to the idea that a particular solmization system has been used. According to Pöhlmann and West (2001, 8), however, it seems “much more likely that we have to do simply with an unsophisticated attempt to express the characteristic sound of the instrument in nonsense syllables”. Their competing narrative is supported by citing other painted figures in which singers’ voices are represented as “oooo”, literary evidence of trumpet imitation in antiquity (“tarantara” in the Roman Ennius), and the fact that the solmization system of Bélis’ account is not otherwise attested until centuries later. We cannot of course be sure as to the *truth* of either of these narratives, but it certainly seems that Pöhlmann and West’s account is the more credible one, “refuting” the earlier explanation. At the very least, something like that must certainly have been their intent.

The situation here is not unlike Kuhn’s (1970, 77 ff.) account of theory replacement in the natural sciences: no theory is rejected without there being an alternate theory to take its place. In the case of the ancient representations of trumpet sounds, the key to meaningful comparison of the two hypotheses is the fact that they are not only narratives about the internal mental happenings of the ancient painter, but that they reveal a multitude of interconnections to a wider net of musical phenomena and musical practices. Refutability of a narrative thus presupposes the possibility of independent evidence concerning such associated practices and phenomena. Similar points can be made, say, concerning music analysis. Sharpe (1993, 68-69) suggests that musical analyses can never be *falsified* because “there is no matter of fact” about “deep structure[s] of that sort which empirical research might uncover” in musical works. Be that as it may, a musical analysis—even one that adopts a narrative stance towards describing musical structure—can surely be “refuted” by telling another, more convincing story about the given musical passage in the light of the available evidence. The empirical refutability of a music-analytical reading of a given passage of music requires, however, that

a larger evidential basis of relevant phenomena can be identified outside the passage itself such that may contribute to the comparison between the chosen analytical reading and possible competing accounts. While analyzing a musical passage, the wider intra-opus and extra-opus context might of course be taken into account because the analyst wishes to demonstrate “unity” or “coherence” within the work in question. Nevertheless, an aesthetically neutral reason for such contextualization is preference for theoretical accounts with wider evidential bases and, consequently, with more possibilities of being refuted. According to this view, music-structural claims are not justified without some indication as to the class of facts that could potentially render uttering such a claim irrational (for discussion, see Huovinen, forthcoming).

For some fact-oriented historical empiricists as well as for some data-oriented systematic ones, theories may still remain unwanted because they sometimes seem to involve too broad ontological commitments. Much of the worry disappears, however, when one realizes that the problem is not so much in theories as such—after all, they are inevitable parts of any scientific discipline—as in too easy an acceptance of scientific realism. If the musicologist wishes to avoid expressing too broad “beliefs about how the world is” (Huron, 1999, 132; Cook & Clarke, 2004, 6), this can be accomplished by making a distinction between *accepting* a theory (as empirically adequate) and *believing* it (to be true) (van Fraassen, 1976, 632; cf. van Fraassen, 1980). Whereas the scientific realist aims at theories that are true, the empiricist may be happy with ones that are “only” empirically adequate—even if we cannot ever be certain of their truth. From such a perspective, the demarcation between empirical and non-empirical musicology is not a question related to ontological commitment, but rather to a distinction between musicological theories which are capable of empirical adequacy and those that aren’t. Of course, this still leaves the theorist the responsibility to indicate which parts of the theoretical account are meant to be judged for their empirical adequacy. Before judging the empirical adequacy of, say, Lerdahl’s (2001) theory of tonal stability, one should first ask whether it is only the results of his elaborate calculations or the whole algorithmic process (perhaps, as a model of human mental processing) whose empirical adequacy is in question.

### NON-EMPIRICIST OBSERVATION

Whereas empiricist philosophers have relied on observation and experience as the only viable basis for knowledge, it is interesting to note that ethnographers have emphasized experience for somewhat contrary purposes. The ethnomusicologist Michelle Kisliuk (1997, 23), for instance, writes that “The renewed emphasis on experience is part of a continuing sea change in the humanities that is moving us toward reflexive, nonobjectivist scholarship”. This makes ethnography appear as a methodology of the pessimistic empiricist: “observation cannot provide us with secure knowledge, but observation is all we can do!” In the present context, one might interpret such a view by noting that for some ethnographers at least, careful consideration of methodology has become synonymous with the belief that the researcher-oriented and the informant-oriented views cannot be separated. Obviously, someone who is about to study a foreign musical culture is primarily interested in the musical life and musical experiences within that culture. Very often, however, the fact that the researcher cannot ignore the effect of his or her own experience turns the researcher’s attention primarily to such things as “[m]y frustration and confusion as to how [...] I should view myself” (*ibid.*, 27). Indeed, this seems to follow quite naturally from an attitude that understands narrative as “a description of the natural history of our conclusions, presenting the evidence as it came to the attention of the observer during the successive stages of his conceptualization of the problem” (Becker, 1970, 199). If the same person is allowed to act simultaneously as researcher and key informant (*e.g.*, DeNora, 2004, 50) one cannot obviously hold on to the distinction between researcher-oriented and informant-oriented approaches to observation.

To take another example from Kisliuk’s ethnography, she writes: “Through this arrangement I was [...] better situated to construct my own identity and relationships free from the weightiest colonial baggage” (*ibid.*, 28). Here we see a looming paradox: the researcher strives to strip herself of her occidental baggage but turns out to focus documenting her own experience. Surely the meaningfulness of the enterprise can be put to question if one consciously tries to forge one’s own experience while addressing it, even in part, as the subject matter of the research! There is no doubt that the researcher’s own conceptualizations and experiences easily get tangled with those of the informants. However, this is no reason for an empirical researcher to give up attempting to determine whether it is his or her own experience or the experience of informants that makes up the primary empirical component of the research. Furthermore, the researcher should also attempt to maintain the chosen orientation. This is because the empirical component of research is of such crucial importance



that by blurring that component one risks changing the subject matter of the research, thereby making the inquiry ill-focused and any theoretical claims difficult if not impossible to refute.

An analogous point can be made concerning the researcher who attempts to report the experience of other people. For example, when an ethnomusicologist suggests to an informant some theoretical ideas that the researcher himself is conversant with, thereafter reporting the informant's agreement that these ideas also match his own experience (*e.g.*, Berger, 1997, 477-478), it is clear that the ensuing descriptions cannot be labeled empirical, even though they are presented as being about the informant's experience, and even if they have "emerged in the fieldwork dialogue" (*ibid.*, 478). Even granting that the experience of the informant and that of the researcher cannot be wholly separated, it would still be naive to suppose that the only alternative is to throw up one's hands and intentionally blur the line between them.

Such wavering between reporting one's own experience and reporting the experiences of others becomes fatal for the research if there is, in addition, no clear conception of the categorizations under which the perceptions or observations are being done. Accepting the basic insight of the theory-ladenness discussion—that all observation is observation of something *as* something, one would then have a collection of variously categorized observations without a clear sense of whose observations they are. Of course, there are a lot of researchers who think similarly of categorizing the observations as they do of defining the observer: it cannot be done. To quote once more from Kisliuk (1997, 37), she reacts to the problem by turning to metaphors and poetry "to tackle the ineffable but crucial aspects of experience that can only be addressed poetically." Of course, there is nothing strange about the combination of multiple observers and ill-defined or multiply categorized observations. Such a combination is akin to a freely winding discussion in a family meeting in which various participants recount their loosely linked, individual and collective experiences, sometimes forgetting who first remembered a given event or which participants had actually experienced it in the past. Nevertheless, combining multiple categorizations with multiple observers does not certainly qualify as empirical research in the sense that the researcher has not even tried to pinpoint the observational component down in a manner that would be appropriate for the purpose of saying what the observations are about. Observation is taken as fluid and evasive, and that's it.

Thus, it seems to me that the reliance on observation or experience in general is not enough for our research to be genuinely empirical: we also need to seriously strive towards explicating the empirical component of our research. For sure, we need not deny the difficulty of separating our own experiences from those of other people, or the even greater difficulty of understanding the conceptual component of our experiences. There is indeed the danger that by taking a stand in such questions we may sometimes err. However, if we lack the willingness and the courage to present refutable theories even in these most basic methodological questions we should surely refrain from calling ourselves empirical researchers.

### THREE STRANDS OF MUSICOLOGICAL EMPIRICISM

The considerations of the previous section were not put forward in order to accuse musical ethnography or any other research paradigm of a non-empirical attitude. Rather, they make it more feasible to lay out a rough classification of empirical research orientations. In effect, it was suggested that an empirical research programme should strive to keep either the observer or the categorizations of the observations constant. Consequently, we may now differentiate between three different strands of empirical research: in the first one, all of the observations are taken to fall into the same category; in the second, all of the observations are by the same observer; in the third, both of these criteria are fulfilled. These broad possibilities of constructing the empirical component of musicological research are depicted as the gray area in Table 1 below. The fourth possibility, with multiple observers and multiply categorized observations, is left blank, following the argument of the previous section. The three empirical orientations are here called psychological empiricism, historico-analytical empiricism, and systematic empiricism. The table thus represents an attempt to redefine the relationships of the three varieties of empirical musicology that were encountered in the second chapter of this paper. It is worth pointing out that some of the terms employed may also be used in broader ways. For example, "systematic musicology" as such may well be taken to incorporate non-empirical approaches to musical systems (*e.g.*, tone systems); some conceptions of "music psychology" may cover speculative (*e.g.*, psychoanalytically oriented) traditions; similarly, "historical musicology" or "music analysis" do not always emphasize the primacy of observation or perception. Here, the purpose of these terms is merely to distinguish some paradigmatic attitudes towards the observational element within the field of empirical musicology.

	One observer	Multiple observers
Observations similarly categorized	Systematic empiricism	Psychological empiricism
Observations multiply categorized	Historico-analytical empiricism	?

**Table 1.** Three varieties of musicological empiricism.

Each of the three approaches presents an idealized model of the perceptual or observational component that is built into the research methodology. The nature of the idealization is easy to see in the case of psychological empiricism. In a lot of music-psychological research, we find paradigmatic cases of similarly categorized perceptions by multiple perceivers. Let us say, for instance, that the participants in a music-psychological study are asked to vocalize what they might experience as suitable tonal centers to some musical stimuli (cf. Huovinen, 2002). After all methodological care has been taken, the researcher simply has to suppose that the vocalizations of the participants indeed do represent attempts to convey their subjective experience of tonal centrality in the stimuli. As in any number of suitably analogical tasks, such similar categorization of the responses is a necessary prerequisite for any serious interpretation of the results. Notice that we are not talking about the physical similarity of the stimuli that are presented to the multiple perceivers. What is at issue is that there has to be some minimal assumption that (most of) the participants are actually reporting such aspects of their experience of the stimuli that correspond to the categorization given to them in the task instructions. In the above example, the participants reported the relevant aspects of their experience by uttering musical sounds, but the basic situation is not altered if the expected responses are numerical (as in a rating task), or even if they are qualitative descriptions.

Another point of importance is the way in which such conceptualization of the observational element goes hand in hand with a particular research interest. This is easier to see by tentatively formulating an example of a typical research question for each of the three orientations. Thus, in a music-psychological experiment, the multiplicity of participants in connection with the assumption of similarly categorized stimuli is concomitant with a research interest in the behavioral and mental processes that accompany such categorizations within some population of listeners. This is expressed by the following research agenda for the psychological variety of empirical musicology (the main focus of research is given in boldface):

(PsE) How are **perceptions of type C** organized within the population *P* of perceivers, given the field of objects *F*?

For simplicity's sake, the empirical component is here expressed in terms of "perception", but one could suitably substitute "observation", "experience", etc. Besides the focus on a certain class of perceptions, PsE highlights some aspects as to how such a research interest should be put to practice. As was argued above, in all varieties of empirical research it is of crucial importance to be able to characterize the perceiver or perceivers in as accurate a manner as possible. Thus, the multiplicity of perceivers requires that one can specify the population *P* of perceivers in some acceptable manner. Second, the research question obviously has to be operationalized with reference to some field of objects *F*. In a music-psychological experiment, such a field of objects is constituted by the set of stimuli that is taken to represent either a domain in which perceptions of type *C* are naturally made, or, perhaps, the whole range of possibilities for acquiring perceptions of type *C*. On other occasions, the field of objects is not controllable by the researcher. One may consider, say, a study in which participants are asked to freely describe their strongest musical experiences (Gabrielsson & Lindstöm Wik, 2003). Here, the field of objects that the observers have to consider is constituted by the whole set of their past musical experiences. Still, the basic situation, indicated in Table 1, is not changed: we have a multiplicity of observers, each relating their memories that fall under one categorical description "strongest musical experience".

Now, let us turn to historico-analytical empiricism, involving multiple observations by a single observer. Above, we saw examples of this combination in sketch studies and in the interpretation musically relevant archaeological findings. Also music analysts sometimes view their enterprise as empirical experimentation with themselves, so to speak, in which they observe the score, form hypotheses, and test the hypotheses by renewed listening (Moraitis, 1994, 134). Simply put, the

analyst judges whether an analysis is good or bad “according to whether it seems true to experience or not” (Cook, 1987, 219). Whereas introspectionist methods have long since been forgotten in psychology where the focus is on the human perceptual processes themselves, such methods are apparently still widely seen as appropriate when it comes to understanding individual works of music, or the principles that can be used to analyze or generate them. Even today when the musical materials may be subjected to formal computational processing, the “testing” phase typically remains experiential: it is left for the researcher’s own sense of musical meaning and continuity to decide whether a music-analytical algorithm (cf. Temperley, 2001, 6 and *passim*) or a compositional algorithm (cf. Hofstadter, 2001) is working properly. In all such cases the analyst is dealing with a multitude of different perceptual experiences that have to be tied together in a “narrative” fashion. For example, a segmentation of a piece of music by an analytical algorithm may be “tested” by attempting to hear through the piece in the manner suggested by the algorithm so as to create a subjectively coherent image of the piece.

Notice, however, that the single observer could actually be someone else besides the researcher him- or herself. Indeed, one meaningful way of construing the combination of a single observer and multiply categorized perceptions would be a case study concerning the experience of a particular listener, perhaps representing a larger population of musical practitioners. What is important is that there is a single perceiver or observer who is known to some extent—or who represents an established tradition or population of some kind. Accordingly, it is not uncommon to see references to the researcher’s own perception that are to some extent metaphorical: the researcher may simply be consciously realizing a certain kind of methodological conduct that is accepted within the respective research paradigm. Thus, the music historian’s “observation” is certainly guided by source criticism and the music analyst’s “perception” might be steered by currently accepted intellectual schemata (e.g., Schenkerian fundamental progressions). From the present perspective, this is no reason to quarrel: what is crucial is that the multitude of mutually different perceptions or observations are being synthesized and integrated into an experientially meaningful narrative by a single observer. However, this requires that there is an object or an event (or, perhaps, a class of objects or a string of temporally consecutive events) that holds the narrative together. Irrespective of whether one is primarily interested in the individual’s experience of this entity or in the structure of this entity in the light of the individual’s experience, we might express the typical historico-analytical research question as follows:

(HaE) How are **perceptions of the entity  $e$**  organized for the individual perceiver  $a$ ?

Finally, the third possibility for musicological empiricism combines a single observer with similarly categorized observations. With this combination, we enter the stronghold of systematic musicology with its statistical methods and computer modeling. Such computer-aided methods are “empirical” in the extended sense that they can be seen to model an idealized observer who is extremely laborious and systematic. Laboriousness opens the door for “data-rich” approaches (Huron, 1999), but the systematic aspect is even more important from the present point of view as it allows a similar treatment for all “observations”. In other words, the “perceiver” is now relegated to the role of a methodological supposition. The researcher-orientation vs. informant-orientation that was discussed earlier is simply not very important anymore. In a computerized study, for example, the computer algorithm or statistical procedure may represent a “perceiver” whose operation is completely understood. Here, we see the focus of research changing again: if both the perceiver and the categorization of the perceptions are kept constant, we obviously need something else to the equation, as well. Indeed, the field of objects  $F$  that only served a methodological purpose in psychological empiricism now comes to the forefront:

(SyE) How is **the field of objects  $F$**  organized with reference to perceptions of type  $C$ , given a perceiver of type  $T$ ?

Whereas psychological empiricism focuses on certain types of perceptions or observations and historico-analytical empiricism centers on perceptions or observations pertaining to some entity of interest, systematic empiricism zooms in on a field of objects using schematic models of the perceptual or observational process. As here defined, an obvious characteristic of systematic empiricism is therefore the conditional character of its claims: “if someone were to systematically perceive exactly such-and-such features, *this* is what would be perceived.” For example, a computer aided analytical procedure that is sensitive to some specified features in a musical composition represents a mechanical sensing device, or a “detector” for those features. The user of the detector—the music analyst—does not need to claim that anyone would naturally perceive the musical material exactly as the mechanical

procedure does. Still, what makes the results of such a study meaningful is the fact that we may imagine what it would be for someone to systematically perceive the features as the detector does. The mode of inquiry is conditional: it remains a separate question whether music is or may be actually perceived in a way that is in conformance with the detector.

### IS OBSERVATION NECESSARY?

In the above attempt to clarify the relationships between various empirical approaches to musicology, I have taken the word “empiricism” seriously and concentrated on the observational (perceptual) component of musicological research. Some may feel that this is an overstatement: couldn’t we simply define “empiricism” according to some conventional methodological proclivities among those that call themselves empirical researchers? Indeed, some of the leading empirical musicologists’ main emphasis seems not to be the way in which the initial observations are done: we have already encountered Cook and Clarke’s (2004) definition in terms of using large bodies of data; similarly, Huron’s (1999) “new empiricism” mostly seems to be centered on the use of statistical methods. One could now argue that when we explain statistical data, we are not strictly dealing with (particular) observations at all (cf. Bogen & Woodward, 1988). However, there are various reasons why one should not forget about the observational aspect as a key element in empirical research. Some of these pertain to the philosophy of science. Hung (2005, 116) argues that it is only by treating empirical data as propositional attitude statements of the form “It is observed (perceived) that  $p$ ” that we may solve the nagging problem of incommensurability that may occur between an explaining theory and a theory in terms of which the data have been expressed. In Hung’s (*ibid.*, 115) view, empirical data in the natural sciences should not be seen as statements about the physical world; rather, they are statements about mental states produced in observers. Accordingly, the *explanans* (the set of explaining sentences) for a set of empirical data should include, among other things, a characterization of the observer in question and a theory of perception (*ibid.*, 121). This is not an occasion to delve into the discussion around incommensurability, but let it be noted that such a stance does inject a healthy dose of self-critical attitude to the researcher. At no point should the researcher forget the contribution of the observational apparatus to his or her data. Thus I have argued above that the theory-ladenness of observation should be accepted but tackled by carefully attempting to pinpoint the observational aspects of research.

According to Huron (1999, 169), it is a “false assumption that disciplines are defined, not only by their subject matter, but also by their methods.” This may be correct as far as Huron’s concern with the distinction between “scientific” and humanities methods is concerned—his primary focus is on whether or not (and how) one could or should use statistical methods. Nevertheless, I would slightly disagree if the discussion is widened from methods of dealing with previously given data to methods of acquiring the data in the first place. As I tried to show in the previous section, different ways of construing the observational component of empirical musicology are naturally yoked to different research interests, and this may provide for natural divisions between subdisciplines. The difference between what I called historico-analytical, psychological, and systematic varieties of musicological empiricism was seen to be linked to our responses to the questions “Is there only one perceiver?” and “Are all of the perceptions of a kind?” As far as the use of statistical methods is concerned, I would further argue that it is only by acquiring a positive answer to the latter question that such methods may meaningfully be applied. If the observations are not held together by their inherent comparability but rather by their being observations by a single observer, quantitative methods simply cannot be put to use. Thus, another reason for emphasizing the observational component in speaking of empirical musicology is that it potentially tightens our grip on disciplinary distinctions as well as on the applicability of various methods for dealing with our observational data.

Above all, observational well-groundedness of our research methodology is a prerequisite for being able to judge between competing theories. Theories can be accepted as empirical if there is a sense in which they could be refuted by empirical observation; if they are nevertheless not refuted, they can be accepted as empirically adequate. Focusing on the empirical adequacy of theories guarantees some measure of conceptual parsimony to theoretical work and is thus the first aid to the common false idea that empiricism is opposed to “abstract theorizing”. Without some criterion of empirical adequacy, past musical thinkers could never have recognized what was wrong with “music of the spheres” or “energetics”. Also in our own time, empirical musicology challenges us to identify and to discard those musical theories for which there is no “fact of the matter”. Whether one accepts the challenge or not, it should be no futile exercise to go through one’s pet theories in order to see whether there is any sense in which a strictly empirical musicologist could accept them. The philosopher Wilfrid Sellars (1963/1991, 171) once noted that before the emergence of a specialized

philosophy of science, all students of philosophy felt obliged to keep an eye on the scientific enterprise, but after its establishment as a separate discipline there has been a tendency among philosophers to leave science to a group of specialists. One can only hope that the zealous proponents of a specialized subdiscipline of empirical musicology will not do a similar disservice to the larger academic field of musicology by monopolizing the empirical component without which, I dare say, all talk about music easily verges on the incomprehensible.

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