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There's madness in your method: a philosophical exploration into the thought of Paul Feyerabend and its implications for music education

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Drawing on the work of the philosopher of science Paul Feyerabend, this paper argues that the popular yet mistaken notion of scientific method has had a deleterious effect on music education by discouraging us from embracing conflict or pursuing counterinductive ways of thinking about music. Feyerabend argues that knowledge advances not according to principles traditionally associated with scientific method, but rather as a result of ad hoc hypotheses, counterinduction, and contradictions that are recognised between partly overlapping theories that are mutually inconsistent. Ignoring this truth results in the erasure of all but abstract forms of knowledge acquired through methodical investigation, which occurs when educators put all of their faith in method and ignore musical knowledge that escapes articulation or measurement. Yet tacit or informal musical knowledge can be seen as the artistic equivalent of the ad hoc propositions that are required, ultimately, to advance knowledge.

Introduction

Numerous scholars have by now challenged the widely held belief that scientific theory and method can be value-free and 'uncontaminated' by subjectivity. Unfortunately however, as Regelski (1996) has shown with regard to music education research, scholars in our field often embrace that very notion of science. He argues that positivist assumptions about what constitutes scientific research have had an overwhelming impact on the way that music educators do research, and the types of research that are considered significant. Notably, Regelski demonstrates that in the debate over whether the 'objective' and 'methodical' approach to research found in the physical sciences is appropriate for a subject such as music, it generally goes unnoticed that 'pure' scientific research is, strictly speaking, neither objective nor necessarily methodical. He cites numerous sources including Albert Gilgan, whom he quotes as saying that 'the interests and day-to-day activities of investigators are to a large degree a function of variables not explicitly dealt with in most treatises on the scientific method' (Regelski, 1996, p. 8) and Thomas Kuhn, who states that 'much scientific behavior, including that of the very greatest scientists, [has] persistently violated accepted methodological canons' (p. 10).

In this paper I wish to extend the implications of Regelski's argument beyond music education research and into the realm of practice with the help of Paul Feyerabend's

anarchistic theory of knowledge. Feyerabend, a philosopher of science, uses historical examples to support his thesis that 'good sciences are arts or humanities, not sciences in the textbook sense' (1987, p. 295). In saying this, Feyerabend distinguishes between actual scientific knowledge that comes into existence in the world and popular misconceptions of it. He argues that the origins of scientific knowledge are generally misunderstood as a result of an overemphasis on methodology, particularly in educational contexts (1988, p. 11). Essentially he maintains that method, if understood in the strict sense to mean the taking of a series of prescribed steps to acquire knowledge, does not factor prominently in the advancement of knowledge and in fact may hinder it. It is critical to note that this is an abandonment of the concept of scientific method *only* as the term is often misconceived. As evidence of this misconception (which is not necessarily shared by thoughtful scientists), Feyerabend cites the manner in which the history of science and scientific education are presented: 'duller, simpler, more uniform, more "objective" and more easily accessible to treatment by strict and unchangeable rules' than is actually the case (p. 11).

The title of this essay is a tongue-in-cheek reference to the fact that Feyerabend demonstrates that the 'method' of science is not as strictly methodical as most people believe because there is an important aspect of 'theoretical anarchy' within the actual method through which scientific knowledge is revealed. He writes that such anarchism, which he describes as the notion that any idea, no matter how archaic or seemingly unreasonable, may advance knowledge, 'is more humanitarian and more likely to encourage progress than its law-and-order alternatives' (1988, p. 5). This conclusion has grave consequences for rationalism, which, according to his reasoning, is *not* responsible for the advancement of scientific knowledge. In this essay I will discuss some parallels between his account of the conquest of various forms of knowledge by scientific rationalism and our profession's 'conquest' of various forms of musical knowledge through the propagation of supposedly scientific views of music education method that result from our never-ending search for professional legitimacy.

In his appropriately titled book, *Against Method* (1988), Feyerabend presents a lengthy argument defending the following thesis: advances in scientific understanding do *not* result from the systematic application of scientific method, by which theories either stand or fall on the basis of supporting evidence gathered from the available pool of facts that have withstood rigorous testing. On the contrary, he argues, the principle of counterinduction, by which *unsupported, ad hoc, or previously disproved* hypotheses are called upon, *is not only useful but necessary* for the development of scientific theories (pp. 50–51, 53, 61–63 and *passim*). This is because

> the material which a scientist *actually* has at his [*sic*] disposal, his laws, his experimental results, his mathematical techniques, his epistemological prejudices, his attitude towards the absurd consequences of the theories which he accepts, is indeterminate in many ways, ambiguous, and *never fully separated from the historical background*. It is contaminated by principles which he does not know and which, if known, would be extremely difficult to test . . . (p. 51)

He goes on to state:

> . . . It is this *historico-physiological character* of the evidence, the fact that it does not merely describe some objective state of affairs *but also expresses subjective, mythical,*

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> *and long-forgotten views* concerning this state of affairs, that forces us to take a fresh look at methodology. It shows that it would be imprudent to let the evidence judge our theories directly and without any further ado. (p. 53, italics in original)

Feyerabend emphasises the impossibility of eliminating interpretive, historically conditioned factors from observation. He refutes the classical empiricist notion, advanced by Bacon, that it is possible to filter out natural interpretations, which are defined as 'ideas so closely connected with observations that it needs a special effort to realise their existence and determine their content' (p. 55) after identifying them through analysis. He states, 'Eliminate natural interpretations, and you also eliminate the ability to think and to perceive' (p. 61). Thus 'ideological components' lie dormant in facts and observation statements, where they are immune from critical examination yet are used to test and refute theories (p. 63).

The inevitable result of this situation is a contradiction between facts and theories such that 'hardly any theory is *consistent with* the facts' (1988: 51). This is because certain facts are unavailable to researchers unless they consider alternatives to the theory that they wish to test. These alternative facts cannot be discovered, however, if one upholds the consistency condition, which states that new hypotheses should be consistent with accepted theories, and which Feyerabend claims is 'taken for granted by many 20th-century scientists and philosophers of science' (1988, p. 24, footnote 1). Yet such alternatives have played an indispensable role in the history of science; Feyerabend's principal example in *Against Method* is the case of Gallileo and the Copernican revolution.

Through a series of detailed supporting arguments, he demonstrates that Galileo, in reviving the Copernican principle and arguing against the geocentric view, proceeded counterinductively. Not only did Galileo not make reference to independent observations or experiments (which would not be possible until the next century) but he employed propaganda and *ad hoc* propositions in order to advance his view, which eventually caused a large-scale shift in thinking that *only after the fact* enabled the collection of appropriate supporting evidence (pp. 67–79).[1] Key to this illustration is the concept of natural interpretations, defined above. Natural interpretations call for the development of what Feyerabend calls an 'observational language', which contains ideological components, i.e. tacit assumptions favouring some world view. Prior to 1630 a favourite argument of those who favoured the geocentric view was the tower argument, which stated that if the earth rotated, as the Copernican theory maintained, a heavy rock dropped from a high tower to the earth below would have to travel several hundred yards to the east during the time of its fall to accommodate the spinning motion of the earth. Since this was not the case the argument was perceived as 'irrefutable' evidence that the earth did not rotate (p. 56).

Now, there were during Galileo's lifetime, two active paradigms for understanding motion: the paradigm in which objects move within stable surroundings and the paradigm in which objects that are contained within or travelling on boats, coaches, or other means of transportation could be perceived to move. The natural interpretation in the first paradigm favours the conclusion that motion is an absolute effect whereas the natural interpretation in the second paradigm favours the conclusion that only relative motion is operative. Feyerabend's point is that the results of the tower experiment can be interpreted as supporting *either* the geocentric *or* Copernican view depending on the observational

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language used to describe those results. If that language is based on an assumption that all motion is operative then one will arrive at the geocentric position (the falling stone *proves* that the earth is at rest because any motion of the earth *predicts* a slant in the falling motion of the stone). Yet if the observational language reflects the idea that only relative motion is operative then the opposite conclusion can be supported (the falling stone *proves* that there is no relative motion between the starting point and the earth because motion of the earth *predicts* that there will be no relative motion between the starting point and the stone) (1988, p. 72). Both paradigms derived from common experience but, as Feyerabend points out, in the early 17th century the second paradigm was by far the less natural of the two.

Galileo banished naïve realism with respect to motion and helped to solidify the Copernican theory not through discovering evidence that proved that only relative motion is operative but by convincing his peers that the second paradigm is 'already universally *known* even though it is not universally *used*' (1988, p. 73). He did this essentially by proposing a revision of the observational language used to describe our everyday experiences. At the time of Galileo's statements, the natural interpretation resulting from observations of experiments such as the tower scenario favoured geocentrism because the prevalent observational language favoured an absolute concept of motion. Galileo had to use coercion to change that observational language; specifically, he equated resistance to the new conceptual system to forgetting a fact that has long been known, a rhetorical device Feyerabend identifies as *anamnesis* (p. 74).

Examples such as this, whereby the hidden ideological components of language and method mask the partiality of prevailing theories or worldviews and can only be overcome by recourse to counterinduction, lead Feyerabend to the following conclusion: knowledge advances not according to principles traditionally associated with scientific methodology, but rather as a result of contradictions that are recognised between 'partly overlapping' theories that are 'mutually inconsistent' (1988, p. 27). The counterargument that the method by which Galileo convinced others of the Copernican view does not matter because what counts is the ultimate result which led to eventual testing and verification of the theory entirely misses the point, which is that scientific *method*, based on philosophical rationalism, has traditionally been acknowledged as the *sole* source of the claim that scientific knowledge is superior to other forms of knowledge. The necessity to violate the norms of induction and the consistency condition whenever the acceptance of a new theory requires a revised conceptual outlook leads Feyerabend to conclude that ideas from *any* source – myths, mistakes or madmen – may, of necessity, participate in the advancement of knowledge.

This is but one of many examples that Feyerabend draws on in attempting to historicise our understanding of scientific method. The broader conclusion that follows from his argument is that since rationalism forms the basis of modern scientific thought science cannot escape the ideological components of its observational languages and must therefore resort to counterinduction to break free of existing prejudices; argument itself 'only has power insofar as it conforms to nonargumentative pressures' (1999, p. 79). Consequently, a proliferation of theories (i.e. epistemological conflict) is desirable while uniformity impairs our ability to advance knowledge in science or elsewhere.

This is the argument developed in his posthumously published (1999) book *Conquest of Abundance*. The crucial role of counterinduction in scientific research demonstrates that

scientific knowledge first asserts itself by force rather than argument. Scientific rationalism, which cannot therefore claim to monopolise truth, has nevertheless erased through theoretical abstraction whole areas of legitimate knowledge that could not be shown to be theoretically based, including tacit knowledge and all other forms of knowledge that are incapable of being reduced to theoretical knowledge. Feyerabend argues that 'the social groups who . . . laid the intellectual foundations for Western science refused to take this abundance at face value. They denied that the world was as rich and knowledge as complex as the crafts and the commonsense of their time seemed to imply' (1987, p. 115). Rationalism's proclivity for negating large amounts of craft knowledge by simplifying it all and subsuming it under theoretical knowledge is attributed to 'the presumptions of philosophy that wanted to interfere with a well worn practice' (p. 318).

The 'Conquest of Abundance' of (forms of) musical knowledge

There is a clear parallel between Feyerabend's account of the conquest of abundance in terms of general knowledge and music education's conquest of abundance in its quest for what many members of our profession believe to be scientific legitimacy. If there are no grounds for placing scientific understanding above other ways of understanding the world, then music education methods supposedly grounded in scientific research should not necessarily garner any special place over less systematic methods of understanding music and transmitting musical knowledge, particularly informal means of teaching and learning and any means of educating musically that elude or challenge theoretically established methods. But more importantly, a logical extension of the previous argument shows that such modes of teaching, learning, and knowing *constitute the ad hoc propositions and counterinductive ideas that are necessary for the advancement of musical knowledge*. In referring to 'theoretically established methods', I am drawing a distinction between theoretical work (the world of ideas) and established theory. 'Theory' in the sense that I am using it here refers to that which is well established, and all theories, once established, have a tendency to present themselves as reified which is the underlying problem being discussed here in relation to Feyerabend's line of thought. In this sense, there is an important difference between those who work within the established parameters of existing theory and those (such as critical pedagogues) who do theoretical work that challenges existing notions.

A major shortcoming of pursuing knowledge by working exclusively within, as opposed to against, established theory is that theories naturally indicate a set of tools with which to pursue solutions to problems that fall only within their purview. Feyerabend writes that 'those problems that yield to the attack are pursued most vigorously, precisely because the method works there. Other problems and other phenomena are left behind, walled off from understanding by the commitment to Cartesianism' (1999, p. 142). Estelle Jorgensen (2009), commenting on how a majority of empirical music education research tends to focus on seemingly 'superficial and self-evident problems' at the expense of problems that deal with the complex nature of music education, basically comes to the same conclusion – that the pre-established tools of inquiry are forged in such a way as to attack problems that may not be all that important and, at any rate, will certainly not bring about a paradigm shift if one is needed (p. 407). I argue that this concern should also extend to music education practice, where a commitment to the traditional, mistaken notion of

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scientific method succeeds in walling off tacit musical knowledge, all those elements of connoisseurship that are immeasurable, and all aspects of musicianship that are (as yet?) too subtle to be measured.

The reason I am claiming a special place for informal music learning and connoisseurship is that these phenomena, although they encompass much that can be specified, also contain much that cannot, and what cannot are forms of musical knowledge that are unacknowledged in the realm of logic and theory, which obviously holds considerable sway in formal educational contexts. This line of thought was first explored by Wayne Bowman (1980), who built his arguments on those of the philosopher of science Michael Polanyi. Polanyi agrees with Feyerabend that subjectivity cannot be purged from the pursuit of scientific theories. His principal thesis is that the human act of asserting any statement as fact is necessarily accompanied by a personal commitment, which derives from a framework of belief. Since facts can only be asserted *within* a framework, he concludes that the ultimate bases of our scientific beliefs cannot be asserted, but must simply be acknowledged as part of this (subjective) framework. In this sense, all knowledge is personal, as even the most 'objective' facts involve appraisal and commitment on the part of the knower (1958, p. 60).

Polanyi's central argument differs from Feyerabend's insofar as the former focuses on the notion of personal knowledge as a key component of reason. The argument is predicated on a distinction between two types of awareness: focal awareness and subsidiary awareness. These mental states are mutually exclusive in the sense that one cannot be aware of the specific content that comprises subsidiary awareness while concentrating on focal content. Using music as an example, Polanyi asserts the 'well known fact *that the aim of a skillful performance is achieved by the observance of a set of rules which are not known as such to the person following them*' (1958, p. 49, author's italics). A pianist, for example, is not aware while performing of the particular actions required by her fingers in order to execute a piece of music. Her focal awareness is directed at the whole process of performing. When focal attention shifts to the subsidiary elements of an action such as playing the piano, the result is self-consciousness or 'stage fright'. In this case, the subsidiary elements of playing the piano are considered to be 'logically unspecifiable', because for the performer to specify them would 'logically contradict what is implied in the performance or context in question.' (p. 56). Thus the particular 'rules' of skilful performance must remain tacit or hidden by dissolving themselves into subsidiary awareness, so that, collectively, they can serve as a tool, or framework, for connoisseurship. Therefore 'connoisseurship, like skill, can be communicated only by example, not by precept' (p. 54).

Bowman (1980) has articulated implications of Polanyi's argument for the field of music education, referring to connoisseurship as 'the ultimate goal of any truly musical endeavor', and insisting that this state of knowledge, in which 'discriminative ability extends far beyond the domain of that which [the connoisseur] is able to articulate', is arrived at by 'forgetting' or 'obliterating' specific content (i.e. propositional knowledge) and allowing it to dissolve into the context of subsidiary knowledge (pp. 236–237). Bowman concludes that one of the primary objectives of music education is the building of contexts, since what is specifiable in music becomes truly meaningful only once it has dissolved into a context of subsidiary awareness, or as Polanyi put it, once it has been 'integrated into the practical knowledge of an art' (p. 50). The notion of a lack of logical specifiability marks the point

at which Feyerabend's and Polanyi's lines of thought come into contact with one another. Lack of specifiability also places informal music learning practices and connoisseurship at risk of a 'flattening', or abstracting process whereby the richness of their knowledge content may be drained in formal educational settings if educators succumb to the idea that only theoretically justifiable or methodically generated musical knowledge 'counts'.

Preoccupation with 'Method' in North American music education

Two interrelated principles of Feyerabend's anarchistic theory are particularly suitable for gaining insights into the problem of obsessive scientism in North American music education practice. These are: (1) the notion that uniformity is mistakenly considered a sign of epistemological health and (2) the idea that observational language masks the ideological components embedded in natural interpretations, thus leading one to believe that scientific observation is a neutral endeavour and reinforcing (1). I will now offer examples of how these principles apply to music education practice with respect to the Kodály method and Edwin Gordon's Music Learning Theory, as these two methods,[2] which are both influential in North American contexts, stake the greatest claims for scientific legitimacy. In the discussion that follows and for the remainder of the essay, the term 'method' should be understood to refer to instructional methods; however, because method in the general sense has been highly influenced by notions of strict adherence to logic and sequence that are associated with the (mis)conception of scientific method, the two concepts are somewhat difficult to disentangle. These examples are intended to demonstrate that Feyerabend's concept of madness as a crucial ingredient in method is often overlooked when the concept is applied too strictly.

The Kodály method, which uses indigenous folk music to teach sight-singing skills in a systematic manner in order to achieve its primary objectives of music literacy and an appreciation for the masterworks of Western art music, has been 'accused of' scientism already (for example, Woodford, 2000). But I am interested in assessing the degree to which North American adaptations of this popular system (which was gradually internationalised) exhibit these two particular principles. The well known Kodály specialist Lois Choksy gives some indication in her numerous publications. In prefacing the second (1988) edition of *The Kodály Method,* she explains her primary reason for revising the 1974 text, which was that the first edition was not sufficiently prescriptive. There was never any consideration given to revisiting any of the underlying principles of the method, which were thought to 'remain immutable' (p. xiv).

Although the musical content of sequences can (and should, according to Kodály specialists) vary, strict adherence to sequence based on a progressive introduction of less common intervals and rhythms is emphasised in the method because this organisational structure is believed to reflect 'normal child abilities at various stages of growth' (Choksy, 1988, p. 10). Kodály's belief that children's music learning invariably occurs in fixed stages, following a Piaget-like model, has been challenged on the grounds that it does not accurately reflect postmodern views of knowledge and it reduces complex learning processes to simplistic, generic formulae (Woodford, 2000). Yet, if Choksy's texts are any indication, faith in the scientific claims of a universal sequence of learning continues to provide the bedrock of legitimacy for this methodical approach, which may well

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explain the method's popularity. Implying that it would be unhealthy to expose students to epistemological conflict, one of the more popular books on Kodály states that educators must reach a consensus on 'a core of basic ideas about music' *before* they can 'possibly hope to teach music to children' (Choksy, 1981, p. 150, italics added).

Of additional concern is the use of what we (following Feyerabend) can call observational language to gloss over natural interpretations when making scientific claims. For example, the claim that 'the major second, minor third, and perfect fourth appear to be part of a universal musical vocabulary for young children' (Choksy, 1999, p. 11) casually maps western tonal constructs onto children's chants the world over, as if such constructs as interval names were parts of musical phenomena themselves and not simply one way among many to conceive of music. Note the use of observational language to describe what is in fact a natural interpretation. The 'natural' use of the labels describing western tonal constructs masks the fact that they are constructs and implies instead that they are part of the 'scientific observation'. The same can be said for tonic *solfa* when it is employed to describe the results of observations about children's singing. Indeed, the limited tools with which the Kodály teacher must work (tonic *solfa*, hand signs, and a specific set of rhythm syllables) reinforces the idea that they are the only correct tools possible for teaching and learning music, and therefore the only correct way to conceive of music. As social constructs, musical concepts should be even less prone to claims of universality than facts about our physical reality that are grounded in scientific theories. Yet Choksy has claimed that 'there are a finite number of basic musical concepts' and that these transcend cultural differences (1981, p. 153).

Another parallel to the mistaken, unified view of science is the Kodály method's built-in mechanism for reinforcing assumptions about what constitutes good music. In the most recent (1999) edition of *The Kodály Method* (Vol. I), we see reiterated the principal claim inherited from Kodály that music education of the highest quality must utilise as its materials only 'authentic' children's games and songs, 'authentic folk music', and 'good composed music, that is, music written by recognised composers' (p. 15). Leaving aside the tautology underlying the third item, both 'authentic' folk songs and European masterworks can be viewed as the artistic equivalents of popular scientific theories that hold sway for extended periods of time. The only difference is that their legitimacy is supported not by existing evidence that is consistent with current facts but by musical evidence that is consistent with a set of (unspoken) criteria for good composition. For evidence of these tacit assumptions one need look no further than Kodály himself, who refers, in his writings, to 'botched' attempts at musical composition, 'pale' imitations of original melodies, and 'distorted' folksongs. And in terms of non-Hungarian music 'only masterpieces' are to be allowed into the curriculum (Kodály, 1974, pp. 145, 125). The point is that widely accepted criteria for good music are, like scientific 'facts', laden with ideological assumptions.

The American music educator and researcher Edwin Gordon, as anyone who is familiar with his writing knows, claims to have developed the only music learning theory that is based on scientific evidence. Of interest to the present discussion is the extent to which Gordon's theory is permeated by absolute statements supported by appeals to scientific knowledge when in reality absolutism and science are historically incompatible. The theory is predicated on the belief that all children possess objectively measurable amounts of music aptitude, with which all are born, and which fluctuate somewhat in response

to environmental conditions up to about age nine and never thereafter (Gordon, 2007, p. 1–2). Standardised aptitude tests play an important role in the theory, since they are to be used by teachers to best decide how to adapt the learning sequences to individual student needs. There is a hard distinction drawn between the objective measures of such tests (as shown by their validity and reliability) and the subjective evaluations of teachers who interpret their results. When there is disagreement between the two, valid test results are perceived as a valuable corrective to teacher perceptions (p. 5).

Gordon's specific music learning method, which derives from the theory, consists of a series of skill and content learning sequences, which are far more important in Gordon's value system than techniques or materials (such as sheet music), since the latter two elements may or may not be used in a way that services the method (1989, pp. 30–31, 241). Early on in his influential book, *Learning Sequences in Music* (1988), Gordon makes what he considers a crucial distinction between the terms 'technique' and 'method'. While technique is simply defined as a pedagogical aid that works to accomplish one or more objectives, method is 'the order in which sequential objectives are introduced in a course of study to accomplish a comprehensive objective, a goal' (p. 28). Gordon defines 'appropriate method' in terms of correct sequence (i.e. a logical sequence of activities that has been scientifically proven to obtain learning outcomes; in fact, the terms 'music learning theory' and 'music learning sequences' are synonymous in Gordon's view). The measurable outcome of greatest interest, according to Gordon, is the ability to audiate musical patterns, and this outcome provides the basis of his theory. Audiation is defined as 'hearing and comprehending music silently' (1989, p. 7). There are various types and stages of audiation in Gordon's theory, which posits a rigid hierarchy of learning skills, which underlines strong structuralist assumptions about musical knowledge.

The published claims of Gordon's theory are stated in absolutist terms and stake their legitimacy on scientific method as it is popularly conceived.[3] There is arguably a causal relationship between the forcefulness of these claims and the theory's popularity among some music educators. Its propagation is an excellent example of the power of the idea of uniformity as demonstrated by its widespread appeal in certain quarters of the United States, where it has arguably attained paradigm status. Evidence includes: well over 40 educational publications and/or electronic resources currently available through GIA Publishing; the establishment of the Gordon Institute for Music Learning (GIML), a non-profit organisation with its own bi-annual journal devoted to disseminating Gordon's theory and offering an accreditation programme that certifies teachers to become fluent in the method; a proliferation of articles whose aim is to instruct music teachers in how to apply the method in various contexts while seldom if ever questioning the underlying assumptions of the theory;[4] and in certain universities, a learning culture that – owing to a strong presence of Gordon's proponents – can best be described as orthodox with regard to prevailing attitudes toward the theory. Eric Bluestine, author of a relatively recent textbook intended for practical use by teachers, goes so far as to refer to the principles of the theory as 'irrefutable truths about music and music education' (2000, pp. 60–61). This phrase, along with the phrase 'universal truths', is actually used repeatedly throughout the text. All of these factors contribute to a messianic zeal among music educators who gravitate toward ideas that are ostensibly grounded in science (Jorgensen, 2005, p. 32). Indeed, the quasi-religious following that Gordon's body of work has engendered clearly appeals to

educators who believe, as does Gordon, that refusing to confine oneself to one method is the equivalent of teaching without purpose (Gordon, 2007, p. 31).

For evidence of observational language that obscures the socially constructed nature of musical listening we need look no further than the terms 'aptitude' and 'audiation'. In Gordon's theory a student's musical aptitude is indeed precisely measurable and can arguably be shown to develop only up until about age nine; however we must ask ourselves what, exactly, is being measured. The answer is the student's ability to audiate, as defined by Gordon and measured by his tests. The use of the word 'audiation' to describe the process of assigning (appropriate?) meaning to musical patterns is a form of observational language that collapses the difference between what is socially constructed *and valued pre-eminently as music* and what is 'naturally' heard. There are hidden ideological assumptions within this concept that value a communicative view of music over, say, an emotional or any other number of views, and this is made clear when Gordon claims that music, performance and audiation 'have parallel meanings' to language, speech and thought (Gordon, 2007, p. 5). Further, and much more significantly, what Gordon means by communication is not the musical equivalent of a constructive model of language use but rather something like a transmission model. Woodford (1996) notes that Gordon's theory is 'neither constructive nor generative in nature' owing to the fact that it leaves no room for students to construct 'their own original musical patterns and ideas' (p. 88). This is a crucial point, as it underscores how Gordon's hierarchical system does not question but rather reinforces music's traditional categories while associating the terms 'aptitude' and 'audiation' with scientific method, which serves to hide the socially constructed nature of those categories.

In each of these cases both the *method* through which the theory came about and the method of music learning prescribed for children are projected as having legitimacy based on the assumption that scientific knowledge is: (a) more legitimate than other forms of knowledge, and (b) advances according to principles that we traditionally, yet mistakenly, associate with scientific method. To reiterate, those principles are: that uniformity is preferable to epistemological conflict; that it is possible to make observational statements about the world that are immune from natural interpretations and the ideological assumptions that underpin them; and that, as a consequence of proving itself consistent with known facts, theoretical knowledge may claim a superior status to any alternatives.

Concluding thoughts

It is worth reiterating that Feyerabend does not wish to do away with scientific method; rather, he wants to emphasise the integral role that conflict and non-methodical thought play in the advancement of knowledge, to show that 'pure' rationalism cannot advance knowledge without recourse to at least some 'bullying' tactics. Further, he is acutely aware of the pedagogical implications of his position, as he facetiously remarks that his 'pluralistic methodology' does not conform to the traditional, reproductive role of schools, a point with which critical pedagogues agree:

> Pluralism of theories and metaphysical views is not only important for methodology, it is also an essential part of a humanitarian outlook. Progressive educators have always

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> tried to develop the individuality of their pupils and to bring to fruition the particular, and sometimes quite unique, talents and beliefs of a child. Such an education, however, has very often seemed to be a futile exercise in day-dreaming. For is it not necessary to prepare the young for life *as it actually is?* Does this not mean that they must learn *one set of particular views* to the exclusion of everything else? (1988, p. 38)

In a related vein, Donald Schön (1987) writes that

> the relative status of the various professions is largely correlated with the extent to which they are able to present themselves as rigorous practitioners of a science-based professional knowledge and embody in their schools a version of the normative professional curriculum. (p. 9)

There is indeed enhanced status and respect associated with any profession that appears to possess a unified body of theoretical knowledge embossed with the magical stamp of so-called scientific method. If educators as a group have an inferiority complex about their professional status, then music educators, who work in a field of 'soft' knowledge, seem to have even more to prove. Interestingly, despite all the rhetoric about rigour and standards, the two most quantifiable criteria for entry into music teacher education programmes in the United States, tests of musical skills and Grade Point Average, were not found to be reliable indicators of teaching success at the pre-service level (Pembrook & Craig, 2002, p. 801). Unfortunately, however, professional aspirations that manifest themselves as obsessive scientism continue to push our profession toward a mistaken view of musical knowledge as unified and discoverable in its entirety.

The tendency to associate conflict with unhealthiness can be traced back to the relatively recent (although in some ways continuing) prevalence of positivism and, in particular, overly structural accounts of knowledge. Cherryholmes (1988) notes that in the field of curriculum studies 'an array of metaphors related to death and illness have been used to describe the field' in light of its lack of consensus on crucial issues, definitions and approaches. The idea that conflict signifies illness or death of a field of knowledge is a gross misconception, however, because 'internal conflicts and turmoil are not anomalous but characterise all fields of study' (p. 131). Nevertheless, she feels that scholars in curriculum studies may be more likely to perceive conflict as a sign of moribundity when comparing their situation to that of other fields of study because 'the absence of foundations is simply more noticeable in curriculum' (p. 149). One wonders if a parallel situation exists in music education. Perhaps the lack of obvious foundational principles in a relatively young field of study (certainly compared with the 'hard' sciences), in which competing philosophies and theories are still (thankfully) fighting it out, is misperceived by music educators, who are prejudiced by long-standing positivist and structuralist assumptions, as a sign of the supposedly inferior state of knowledge in our field.

According to the thinking that derives from this misperception, the situation must be addressed by striving to 'unearth' a set of foundational principles that can be agreed upon more or less unanimously and permanently, thus restoring a sense of health and legitimacy to the field. As Jorgensen (2003) notes, the (US) National Standards movement of the 1990s is a perfect example of this type of reaction because it was 'predicated on the notion that there is a universal structure [of knowledge] against which standards may be measured' (p. 36). Along these lines, Cathy Benedict (2004) observes that campaigns for music to be

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accorded 'high status knowledge' automatically translate into a search for basic 'truths' (p. 8). But as critical pedagogues Purpel and Shapiro (1993) point out, the mistaken notion that a basic set of truths in any field can be uncovered through methodical means 'eliminates the process of struggle and conflict through which human beings have constantly sought to challenge and remake their worlds' (p. 103).

Surely a major reason this sense of struggle remains hidden is the widespread acceptance of the myth that Feyerabend tried to dispel: that the strictly applied scientific method – as opposed to randomly generated creative insights or counterinductive propositions – is the progenitor of *all* our significant knowledge including musical knowledge. The mistaken notion that important revolutions in thought are attributed in all cases to the methodical and consistent process of abandoning old hypotheses in favour of newer, successfully tested ones has led to a view of knowledge as a monolithic structure that is constantly being repaired and added to but is otherwise more or less stable. Major paradigm shifts, as Kuhn (1970) argues, are not portrayed as the results of counterinduction because textbooks are rewritten after every revolution to mask this fact. According to Kuhn, textbooks 'disguise not only the role but the very existence of the revolutions that produced them' (p. 137).

If, as Feyerabend insists, we have been conditioned by our respect for method (in the strict sense of the term) to overlook the importance of mutually inconsistent theories to the empirical process itself, then it follows that music educators will probably not consider it important to discuss alternatives that are inconsistent with whatever they believe to be the leading theory or method. Equally important is the fact that they will perceive conflict as a source of embarrassment, an indication of disciplinary immaturity. One way of interpreting Feyerabend's argument is as an acknowledgement that conflict and counterinduction have always existed as crucial components of scientific method and that perhaps we should therefore repackage the phrase to include this notion of conflict. In any event, the term method has arguably taken on these connotations in the more general sense in which it is used in education. In *Teaching Music in the Twenty-First Century* (2001), Choksy *et al.* (2001) define music education method as necessarily having 'a unified body of pedagogy unique to it' (p. 2). This belief appears to maintain widespread acceptance, at least in North American contexts. Perhaps it is time that we make room for the notion of a music teaching method that not only includes but actively engages with overlapping, mutually inconsistent theories (as opposed to falling back on the notion of 'eclecticism', which implies a friendly but disengaged coexistence of incompatible theories). Whether we choose to embrace conflict as part of method or reject method as overprivileged may in the end amount to the same thing, however. More importantly, if we accept Feyerabend's idea of epistemological conflict as healthy and 'scientifically-generated' knowledge as non-privileged, then it follows that systematically acquired and theoretically grounded musical knowledge has *no more claim to universal permanence* than does untested musical knowledge arising from non-Western musical values, informal musical practices, or any forms of musical knowledge that lie outside the domain of clearly articulable musical concepts.

How can pluralism and contradiction be used in positive ways to offset the ideological effects of particular, reified views, and therefore to advance musical knowledge? The most obvious answer is that music educators should avoid limiting their consciousness

by deriving their knowledge of music education entirely from within the confines of one prevailing theory. No one theory can offer a truly objective view of any aspect of reality. Yet as theories solidify and gain adherents over time, the concretisation of their partial views ironically results in 'the gradual transformation of revolutionary ideas into obstacles to thought' (Feyerabend, 1988, p. 30). Feyerabend quotes John Stuart Mill to explain how as theories become popularised, they become less well understood because their nuances, their 'problematic aspects', dissolve into slogans (p. 30). If one subscribes to a theory wholeheartedly, and particularly in the absence of historical knowledge pertaining to the theory's origin, there is less likelihood of perceiving areas of overlap or dialectical tension between that theory and any rival. Accordingly, there is increased likelihood that the theory in question will become reified or, as Feyerabend prefers to say, fossilised. It is clear that Feyerabend is not advocating what Zavarzadeh and Morton (1994) call 'eclectic pluralism', whereby the equal weighting of each person's opinion renders the results politically impotent (p. 17). Rather, his insistence that anarchy plays a key role in the advancement of knowledge derives from his understanding that counterinductive ideas, rather than methodical reasoning, can lead to proven *truths*. Consequently, the implication is that music educators should introduce students to counterinductive ideas about music not as a precursor to laissez-faire relativism but so as to actively engage them in a healthy pluralism out of which new musical knowledge will eventually emerge.

Notes

1 The same story of Galileo is told by Richard Morris, who asserts that 'scientific discovery is as illogical and unpredictable as creative activity in any of the arts' (Morris, 1993, p. 131) Also, Polanyi uses Einstein's discovery of relativity to make essentially the same point. When Einstein intuitively discovered the principle, 'unaided by any observation that had not been available for at least fifty years before, our positivistic textbooks promptly covered up the scandal by an appropriately embellished account of his discovery' (Polanyi, 1958, p. 11).

2 Gordon has long claimed that his music learning theory is the *only* one that produced a method. Kodály and other 'methods' are described by him as 'techniques' since they 'do not incorporate sequential objectives based on music learning' (Gordon, 2007, p. 32).

3 Even those who support the theory agree that Gordon's texts are dogmatic. Scott Schuler, who has written articles on the theory, one of which was mildly critical, notes that 'the manner in which [Gordon] presented his material was anything but tentative' (Schuler, 1991).

4 For example, between 1991 and 1992 *The Quarterly Journal of Music Teaching and Learning* devoted a series of articles to Gordon's Music Learning Theory which, with one exception (Schuler, see previous footnote) were not the least critical of the theory. The few concerns raised were limited to the statistical significance of tests related to applications of the theory. Most researchers seem content to discuss the best ways to apply the theory to classroom situations. See for example: Grunow, R. F. (1992) The evolution of rhythm syllables in Gordon's Music Learning Theory, **3**, 4, 55–66; Gouzouasis, P. (1992) The comparative effects of two tonal pattern systems and two rhythm pattern systems for learning to play the guitar, **3**, 4, 10–18; Schuler, S. (1991) The effects of Gordon's learning sequence activities on vocal performance achievement of primary music students, **2**, 1–2, 118–129; and the following articles in the same issue: McDonald, J. C., The application of Gordon's empirical model of learning sequence to teaching the recorder, 110–117; Azzara, C. D., Audiation, improvisation, and Music Learning Theory, 106–109; Cutietta, R. A., Edwin Gordon's impact on the field of music aptitude,

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73–77; Walters, D. L. Edwin, Gordon's music aptitude work, 65–72; Byrd, M. E., Gordon's sequential music learning and its applicability to general music, 59–62.

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