

On Defining Music (forthcoming The Monist)

Music is ancient, pan-cultural, and, given the spontaneous emergence of song in children, virtually universal. Moreover, we can immediately and almost infallibly recognize it, even where it comes from a culture that is foreign to us. Though I may be unable to predict how such music will continue or to recognize errors, and though it may sound strange to me, I can be in no doubt that it is music I am hearing.

I say "almost infallibly" because there are marginal cases and a few possibilities for error. Some musical-sounding things are not music: infant-directed speech,¹ tone languages,² and "sing-song" linguistic accents, as in Welsh. In addition, some patterned sounds might be mistaken for music: these include sound art,³ sounds that are not humanly made, such as the nightly rice field frog chorus, and sounds that are not primarily intended to have the aural character they have, such as incidental auditory effects in the factory making crystal glasses.

In this paper I reflect on the enterprise of defining music. Although I critically review some proposed definitions in order to show the difficulties inherent in the task, I do not offer a counter definition. Instead, I consider four strategies that might be adopted by the would-be definer. I argue that none of these alone can succeed, though, in combination, they might.

¹ Infant-directed speech, or "motherese", is a highly inflected, repetitive mode of speech used universally by caregivers to communicate with babies.

² In tone languages, which are found mainly in eastern Asia, the relative pitch of a syllable or word affects its meaning.

³ Sound art consists usually of recorded or computer-generated, edited sound files that are presented as sonic artworks but not as music. For a rare philosophical discussion of the distinction, see Hamilton (2007).

Some definitions of music

Compared to art, philosophers have not shown much interest in defining music. In fact, definitions of music are rarely attempted. I am not sure why this is the case. Perhaps it is because, as was observed earlier, we are usually highly successful in identifying music as such, and don't feel the need of a definition. And the task of producing a watertight definition of such a wide-ranging phenomenon as music is not only thankless but also challenging. To indicate the obstacles that stand in the way and to consider strategies for negotiating them, I now briefly discuss proposals advanced by Jerrold Levinson and Andrew Kania.

Levinson, whose goal is to define music as an art, proposes that music is "sounds temporally organized by a person for the purpose of enriching or intensifying experience through active engagement (e.g., listening, dancing, performing) with the sounds regarded primarily, or in significant measure, as sounds" (1990:273). He is happy to exclude Muzak on the grounds that it is not intended for attention and birdsong because it is not humanly created or artistically motivated, though he allows birdsong to qualify under a secondary, legitimate use of "music" where it refers simply to a type of sonic phenomenon, namely one that sounds musical. He concedes John Cage's "silent" piece *4'33"* as a limiting case of music, since Cage "has organized for listening the anticipated but unpredictable sounds that will occur during a performance" (1990:270, fn. 3). He denies, however, that this shows that *any* sounds, when not so framed, *are* music. At most it shows that any sounds can be treated *as if* they are music.

Perhaps unsurprisingly, philosophers disagree about the status of Cage's *4'33"*, so before evaluating Levinson's definition I sketch my view of the piece. Though I have not provided a definition, I have argued (Davies 2003) that if music is organized sound, however liberally we construe the notion of organization, it must be the case that some sounds are excluded such that, were they to occur during a performance, they would be ambient to it. Cage's work is usually understood as absorbing all the sounds that take place in the performance period as its contents, so that none count as ambient. In that case, Cage's piece fails the necessary condition for music that I have proposed. I conclude that, as an artwork, *4'33"* is a performance piece, a theatrical work if you will, about the performance of music, not a musical work as such.

The main difficulty with Levinson's definition, I think, is that music does not and is not always intended to call attention to itself. I think "Happy Birthday" is music, but I doubt that its composer intended either that it enrich the experience of its singers or that it be regarded primarily as sounds. Many baroque composers wrote Tafelmusik (table music) – that is, music to provide a background accompaniment to their employers' meals – and it is possible that this was sometimes not even registered as music by those engaged in eating and conversation. A composer who wrote table music to draw attention to itself simply did not understand such music's function, which is to be self-effacing. While we might dismiss the claim to music-status of some forms of Muzak, it seems unduly harsh to demote Telemann's *Servizio di tavola* on the grounds of its aptness for its purpose. Similarly, nowadays much film music is intended only for liminal, perhaps unconscious, awareness on the part of the engrossed viewer. And composers of the themes that introduce much-repeated TV shows probably do not intend them to be attended to. I think Levinson is too focused on Western concert music, even if his definition is, as he says, intended to apply cross culturally.

Admittedly, Levinson's account leaves a space between art music and merely musical sounds, and he might allow that this gap may be occupied by something quite properly called "music" despite its lack of pretension to art status. In that case, however, the definition excludes the greater part of what is correctly identified as music and leaves open the question of what art and non-art music share and in virtue of which they are music.

Kania (2011) is also troubled by the intended-aesthetic-experience component of Levinson's definition. As a counterexample, he offers the practicing musician, who makes music not intended for an audience. To dodge the obvious reply, we might change the example to the doodling jazz improviser, so that the performer is also the composer. Kania also notes the range of non-aesthetic functions to which music can be put, such as waking up a friend, and defends Muzak's status as music, albeit as *bad* music.

Kania proposes his own definition: "Music is (1) any event intentionally produced or organized (2) to be heard, and (3) *either* (a) to have some basic musical features, such as pitch or rhythm, *or* (b) to be listened to for such

features" (2011:12, also 2010:348). The disjunctive third condition is there to allow for avant-garde works that lack musical features but that are intended to be approached as if they are music. His example is Yoko Ono's *Toilet Piece*, the sound of a flushing toilet on the album *Fly* (1971), which Kania regards as music because he thinks Ono intended that it be heard as such, as is apparent from its inclusion on an album of otherwise uncontentious examples of music. In addition, the (b)-clause distinguishes unmusical avant-garde music from non-musical sound art, even where they might sound the same, because the latter is not projected for an "as if music" regard. Kania (2010) classes John Cage's *4'33"* in the category of sound art, not music. But a genuinely silent piece can qualify as music if it meets the (b)-clause. Kania offers his own composition, *Composition 2009 #3*, as an example: "The score reads as follows: 'Indicate a length of silence, using the usual cues with which you would signal the beginning & end of a single movement, song, etc. (The content of this work is the silence you frame, not any ambient noise.)'" (2010:351).

Though Levinson, Kania, and myself have no ideologically motivated desire to exclude avant-garde and experimental works from the realm of music, we turn out to take different views on Cage's *4'33"*: Levinson has it as music, Kania as sound art but not music, and I rate it as a non-musical work of theater.⁴ It would be a mistake, however, to judge the accounts solely in terms of how they handle controversial borderline cases like *4'33"*, *Toilet Piece*, or *Composition 2009 #3*. Previously I objected to Levinson's definition by reference to what I take to be uncontroversially mundane pieces of music that it excludes, such as "Happy Birthday" and Telemann's *Servizio di tavola*. If it is clearly to be defeated, Kania's definition should be treated similarly. Whereas Levinson's definition

⁴ I currently lean toward Kania's position: Cage intended the audience to attend to the sounds more than to the ritual signs of performance and he did not want the audience to try to hear the sounds as if they are music. Moreover, Kania can appeal to the conventions of sound art (as readily as Levinson as I might appeal to those for musical performance) to explain both how the performance setting is necessary to prime the audience's attention and to establish the work's boundaries.

seems to me to be too narrow, so I sought music that it inappropriately omits, Kania's definition strikes me as too broad, so the relevant counterexample is of nonmusic that it includes. Morse code is one such because it plainly meets (1), (2), and (3)(a): it is intentionally produced to be heard in terms of rhythm.

There is a hint that Kania might reject the counterexample. He allows that speech displays periodicity but suggests that, in a definition of music, "the term ['rhythm'] would be restricted to a division into stricter units of time, such as characterized by measures of two or three beats" (2011:8). If this implies that rhythm in music must be structured in terms of a regular (or any) meter, it is surely far too strong. Some music employs irregular, constantly changing meters and some other music is in free rhythm. But if the main point is only that the periodicity of speech is unlike the rhythmic organization of music, it will not rule out Morse code, which is much more tightly and systematically organized according to duration than utterance is.

In any case, I do not think it is difficult to come up with many other examples that we would not count as music though they satisfy Kania's proposed definition. Sirens, the chord that sounds when I start my Macintosh, the drumming of my fingers on the desk as I contemplate what to write next, the wind chimes that hang above my porch, and tone languages satisfy the definition without being music (though they may be musical).

Kania can respond by arguing that my examples count as music, or alternatively, that they are not sufficiently like music to challenge his view. Obviously I have chosen examples intended to defeat both approaches. Though I allow that the Macintosh start-up chord could be replicated in a deliberately composed musical work that consists of nothing more, I doubt that the start-up chord qualifies as such a work or is generally regarded as music, though it is plainly intended to be heard as exhibiting musical features. And while the wind chime is made with the intention that it produce music-like sounds when activated, I doubt that we regard the outcome as music. Kania applies the second strategy to the case of tone languages. He cites evidence that pitch is treated more freely in tone languages than in most music, but I doubt that that fact gets him off the hook. On the one hand, the person who speaks a tone language certainly intends relative differences in pitch to be important, and on the other

hand, some non-Western music, such as Australian aboriginal singing, relies more on slides and portamentos than on fixed pitch points.

I hope that by now some of the difficulties are apparent: across the globe music takes many diverse forms and serves a variety of functions. Meanwhile, we are surrounded by sonic phenomena in which we can take a range of interests, including listening to them as if they are music. Some of these phenomena are plainly musical though they are not usually thought of as music, birdsong for example. And many unmusical sonic phenomena, nevertheless, share properties in addition to that of being audible, with music. And note, finally, that music can incorporate quotidian soundmakers (anvils, cowbells, typewriters, sirens, etc.) and can be composed to mimic the sounds of natural events (such as wind and thunder), mechanical devices (trains), or the sounds of physical labor (forges, for instance).

Rather than attempting a definition that will negotiate these traps and pitfalls, I consider at the broadest level how the definition of music might be approached. I distinguish four ways in which we might try to define music – functionally, operationally, historically, and structurally – and show that none of these alone can produce a definition. I suggest, however, that some combination of the characterization of music in terms of its structure and its traditions holds out the hope of definitional success.

The functional definition of music

A common strategy is to define an item in terms of its design or natural function. Scissors are tools intended to cut by shearing; the heart is the blood-pumping organ. Music, however, does not lend itself to functional definition. Simply, it serves too many very different functions, including opposed ones, and there is no basis for prioritizing or ranking these various functions. Moreover, sometimes these functions are directed to the self (self-expression, for example), sometimes to intimates (lullabies, love songs), and sometimes to the group (national anthems) or even to the enemy (war chants).

It is worth reminding ourselves of the many functions music is employed to serve. It is the target of aesthetic contemplation pursued for its own sake, or it

is a pleasant pastime. Alternatively, it supplies a background "wallpaper" for other activities, such as dining or shopping. It features in courtship. It functions variously to regulate mood and emotions, sometimes cheering up, sometimes calming down, and sometimes ramping up anger and aggression. It is used to induce and sustain trance, dissociation, or inward focus, in other words, to cocoon the individual in a wall of sound that excludes others and the world. And it is employed to stimulate social involvement, other-directedness, and shared identification. It serves to coordinate, entrain, and synchronize the group's shared attention, emotions, dancing, marching, or laboring. It is used both in the celebration of achievement and in the mourning of loss. More generally, it intensifies public ritual – consider hymn singing, for instance – and augments the significance and effects of dramas and entertainments. It labels or symbolizes various types of social event: consider fanfares, Reveille, the Last Post, wedding marches, hoedowns. It is a badge of social status (grand opera) or group membership (*Dixie!*). It plays a central role for adolescents in identity formation and more generally is treated as a significant measure of each person's individuality according to their distinctive musical preferences and tastes. It is an offering to gods and a mirror of heavenly beauty, harmony, or passion. It has been treated as a sub-branch of mathematics and as an analog of astronomical order. The Greeks and early Christians noted its long-term effects on human character and its modeling of virtuous dispositions. It is adopted for its therapeutic and medicinal benefits. It is given mnemonic functions: an especially graphic case is that of the long song cycles of Australian aborigines that not only relate mythical history but trace a map from waterhole to waterhole across the deserts. It is a form of communication, as in the "talking drums" of African fame. And it is a commodity that can be sold and traded.⁵

There appear to be few limits to the functions music has been put to and I doubt that any single function stands out as the primary one. Moreover, as I noted before, music serves apparently opposed functions: to pacify and to incite, to exclude others and to bring the group together, to mark individuality and to

⁵ For discussion of music's multi-functionality, see Dissanayake 1996, Brown 2000, Ball 2010:11–16.

cement the collective's shared identity. In fact, music plays a central role in all aspects of life – work and ease, self-amusement and group enterprises, informal events and structured ritual – and at all social levels – private and public, personal, family, village, and state. So much so, that it is not a candidate for functional definition.

The operational definition of music

A different approach would seek an operational definition of music. Such definitions specify a way of determining the extension of the term rather than uncovering the essence of the concept. For instance, we might define degrees of hunger as the frequency with which a rat presses a bar to obtain food. Now, a great deal of research has been conducted by psychologists, cognitive scientists, and neurologists on the effects of music on the brain and on the neural functions and circuits that music relies on. It is plausible, therefore, to seek an operational definition of music that refers to neural modules or domain-specific circuitry: music is what activates and excites music-specific neural functions or circuits.

Now, this account would be more interesting and compelling if it could be tied to a story about the evolutionary origins of music behaviors, especially if it can be argued that music behaviors were evolutionarily selected for their adaptive significance. It would then be the case that we could characterize music not only as what excites the relevant brain processes but also as what gave rise to them and explains their universal expression. Of course, in developing this account, it would be too simple to assume that neural structures and functions are direct, unmediated responses to environmental inputs. In fact, the neural processes and circuits that music draws on must be the result of a complex interaction of environmental musical inputs, already existing brain structures that serve non-musical aural functions, and physical or other limitations on the brain's plasticity. The complexity of this picture makes it impossible to distinguish evolved and innate neural structures dedicated to music from ones that are created through exposure and training in music (McDermott and Hauser 2005, Patel 2008:402–11). And to complicate matters yet further, modular

functioning need not be subserved by specific neural circuits (Barrett and Kurzban 2006).

It is to be expected, then, that there is disagreement over the interpretation of relevant data. Some psychologists think there are music-specific neural domains (Brown 2000, Huron 2003, Peretz and Coltheart 2003, Levitin 2006), others do not (Ball 2010, and with minor qualifications, Patel 2008), and some of the most detailed reviews regard the evidence as indecisive (Justus and Hutsler 2005, McDermott and Hauser 2005). It certainly is true that music lights up areas all over the brain – Ball calls it "a gymnasium for the mind" (2010:241) – many of which are not music-specific. (We might have guessed this from the earlier list of the multitude of functions music can serve.)

Equally contested are claims about the origins and evolutionary functions of music behaviors. Many argue that music is adaptive (for reviews, see Huron 2003, Cross 2007), though there is significant disagreement over what it is alleged to be an adaptation for. Others suggest that it is a by-product (Pinker 1999) or a technology (Patel 2008, 2010). (For a critical overview of these positions, see Davies forthcoming.)

To illustrate the problem, consider music in relation to language. There is a significant overlap in the neural areas that process music and language (Fitch 2005, Justus and Hutsler 2005, Koelsch and Siebel 2005, Ball 2010) and there are many parallels between the way the brain processes both language and music (Fenk-Oczlon and Fenk 2009-2010). But there is disagreement over which came first. The view that music originated in pre-linguistic emotional vocalizations goes back to the early days of evolutionary theory (Darwin 1880, Pt. 3, Ch. 19:572, Grosse 1897) and has many modern adherents (for instance, Brown 2000, Mithen 2005, Fenk-Oczlon and Fenk 2009-2010). Equally venerable, however, is the argument that music is a by-product that came as a bonus out of the evolution of language (Spencer 1966, Vol. 14 [1857], Pinker 1999, De Smedt and De Cruz 2010). Given uncertainty about the timing of music's and language's respective origins, and about the relation if any between these historical processes, it is not clear which could claim priority over or ownership of neural structures they share in common.

I am not opposed to a scientific or operational approach to the definition of music. I doubt, however, that there is sufficient clarity over matters that would have to be settled were such a definition to be appealing. At this time, music is not a candidate for a plausible operational definition.

The socio-historical definition of music – first pass

The idea here is that we define music as that which stands in the appropriate relation to an historical tradition of music making or to a canon of works. To this end, we might try to adapt Levinson's definition (1990:3–59) of art to the musical case: *something is music if it is intended for regard in some way that prior music was intended.*⁶

Quite apart from reservations about this approach to defining art in general, there are particular reasons for doubting its success for the musical case. This definition puts the emphasis on the experience of the listener, but in considering functional accounts of music, it was apparent that music can be (intended to be) experienced or used in many ways, some of which appear to be diametrically opposed. So, if the functional account fails, this one is likely to do so also. Moreover, there are many different musical traditions, and because some might emphasize this or that function (for example, pacifying children) while others stress different functions (for example, unifying the group), there may be the difficulty of showing why we should regard these disparate traditions all as music making ones.

A plausible alternative would consider the crucial intention to be that of emulating and resembling paradigm works in the tradition (Ziff 1953). But this needs fleshing out. Emulate or resemble their style, their artistic achievement, their use of the *cor anglais*, their expressive effects, or their structural principles? Possibly all of these, though clearly there must be some resemblances not relevant to the conferral of music-status. In any case, I think the stress on works here gets the emphasis wrong. A musical tradition might have no works, only free improvisation. And where there are works, the primary intention is likely to

⁶ Notice that, when it comes to music, Levinson surprisingly does not attempt to adapt his more general definition of art.

be to create new ones that are to be valued for their individuality as well as, or instead of, their similarity to canonic models.

A central intention, one that ties the present piece of music making to the prior tradition that led up to and makes it possible, is to use the idiom and resources of that tradition in a fashion that adds something to it. This is consistent with the composer's rebelling against or trying to change some aspects of the tradition, even as he relies on other of its aspects to bring that intention into effect. And we might come to a definition that gets nearer to the heart of music by considering how to characterize the idioms and resources that mark musical traditions as such. This naturally leads to the next definitional approach.

The structural definition of music

Trying to define music in terms of the elements of music and the structural features that arise from their combination is perhaps the approach most likely to occur to musicologists and philosophers. The goal is to attempt to isolate specifically musical elements and structural relationships between them that together separate music from all other kinds of sounds. This is what lies behind the view that music is organized sound, or patterned sound, or a type of sound structure.

The strongest version of this position will hold not only that there are statistical regularities in the patterning of music but also that there are hierarchies of content. In other words, what is needed is a generative grammar for music that not only indicates how higher complexes are generated from combinations of neutral, atomic elements, but how this results in higher-order hierarchical levels of significance, content, or meaning. That is, we are after something equivalent to both the syntactic rules and semantic principles that generate higher level linguistic meaning: just as phonemes form words, which form phrases, which form sentences, all with transformational rules that can deconstruct how each level supervenes on the one below, so we are after an account of the elements of music, such as the pitched tone, and of the rules by which these can be combined as phrases, which are joined into melodies, which

are combined in expositions, developments, and the like, from which whole movements are comprised.

Lerdahl and Jackendoff (1983) have proposed a generative grammar for tonal, teleologically organized music. Admittedly, a great deal of music is of this kind, but not all. Some music is cyclic and does not seek closure. Some music is not tonal; it uses orchestras of untuned instruments (such as some percussion bands) or deliberately avoids tonality. And it is not as if we can dismiss these exceptions as unconventional or marginal if they are as easily recognized to be music as are the more frequent kinds.

Some might deny this; that is, they might deny that such "music" can be easily recognized as such. For instance, they claim that what Anton Webern composed is not music. But I think such views are often ideologically motivated and that, if we are seeking a global perspective, we should be willing to accept as music a great many practices that, because of our cultural backgrounds and previous musical exposure, do not strike us as accessible. When I claimed we easily recognize foreign music as such, I did not intend to imply that we therefore enjoy it or appreciate it as such. Much highly sophisticated art music, not only in the West but also in other musical traditions is "difficult". That does not take away from its recognizability as music, which I think can hardly be denied to Webern either.

The fact that Lerdahl and Jackendoff's account of musical grammar is limited to teleological, tonal music is not the only problem, however. There are further crucial difficulties faced by any putative structural definition. These arise not only at the level of identifying the atomic units of music but also sometimes in identifying transformational rules that transpose one hierarchical level to the next. Music need not contain pitched notes or tones of fixed pitch, and it frequently contains a great deal of silence and noise. Non-musical sound events – sirens and digitized phone numbers, for example – often do contain patterns generated from notes of fixed pitch. So, it is not at all clear that what characterizes music as such is an exclusive set of sound elements. Equally, it is not clear that music's generative rules go beyond the statistical regularities of syntax to account for content or significance at higher levels. In other words,

they cover organization as sequence but not the significance that characterizes more abstract gestalts.

Consider melodies, which are often central units of higher-level musical content. Most people think of them as rhythmically inflected patterns of pitched tones (or, more correctly, intervals) ordered as to sequence and as to relative stability or tension. But the fact is that the identity of melodies can survive alterations in their interval sequences, and this occurs not only when filigree decoration is added or structurally weak notes are elided but also, for example, in transpositions from the major to the minor. To follow minor key sonata form movements, one must hear that the minor key statement of the second subject in the recapitulation is a restatement of the very tune that was in the major in the exposition, despite differences in their interval sequences. This is a common effect. Melodies are often reconfigured without thereby losing their identity: the new statement is a version of the original, not a variation on it nor a different but related theme. So, the rules that one might have hoped would allow us to explain the identity of specific melodies in terms of the lower-level elements they comprise do not exist.⁷

A further difficulty with this approach concerns the fact that not all music is hierarchically structured to the same degree. It is possible to get music that provides a sequence of base-line elements that cannot be synthesized into higher-order musical manifolds. There is an ordered array or list of elements, but they resist attempts to pattern them. (Perhaps there are long silences and wide intervals between successive notes.) And it is also possible to get music without melodies, or without repetition of sections or parts, or without multiple movements.⁸

In other words, music does not always display a generative grammar and when it does show the appearance of this it turns out to be virtually impossible to specify transformational rules of the kind the theory needs and expects.

In addition to these concerns there is another: this approach tries to define music as a formal system. Admittedly, it can allow that the human purpose

⁷ For a more detailed discussion, see Davies 2001, 2010.

⁸ For a more detailed discussion, see Davies 2001.

of music might be to apply this system in the generation of humanly significant, higher-order musical content. But it is likely there is more to this significance than can be explained solely by reference to music's elements and generative principles, just as there is more to linguistic meaning than is covered by syntax and semantics: in both cases contextual considerations and wider pragmatic conventions can be equally important. And it seems that music's human significance should figure in its definition. The structural approach to music's definition, with its focus on musical elements and how they can be combined, tends to bypass the seemingly crucial fact that music is a culturally embedded human practice, as I elaborate below.

I have argued elsewhere (Davies 2007) that, whereas a *theory* of art's human value must take account of its place in human life, a *definition* of art perhaps need not do so. I do not mean to renege on this general point in insisting that a definition of music should take account of it as a human practice. My point is that, unlike mathematics, which may be characterized as a closed system without regard to its human applications, music is not a closed formal system. As I argue in the next section, to understand what music is necessarily involves considering the non-musical as well as musical social practices that constrain its historical development. If this does not take us back full circle to consider again music's multi-functionality, it at least takes us back to the story about musical traditions and socio-historical human practices. Outside of these it is doubtful that organized musical sounds would count as music and, hence, a structural definition cannot suffice.

The socio-historical definition of music – second try

In considering the view that something might be defined as music in terms of its relation to musical traditions, the earlier account construed this rather narrowly. The emphasis was both on the musical "language" and structural conventions of that tradition and on the present musician's intention to use these to add new music to the tradition. But there are two other respects in which the relation to tradition might be important in defining music.

One difficulty with the structural approach was that not all music is melodic, teleological, assembled in terms of successive, sometimes repeated or reprised, sections. But by contextualizing music historically, we may be able to see the presently diverse array of possibilities as emerging in a regular fashion. If we look at the history of Western music, it seems plausible to suggest that song (and dance accompanied by rhythmically regular music, whether vocal or not) preceded instrumental ensemble music, that monodic, antiphonal, and verse-chorus forms of singing were succeeded by harmonic or polyphonic vocal music, that short one-movement forms came before longer multi-movement forms, that tonically and harmonically simple music was progressively complexified, and that tonal/modal music preceded atonal music. One can see this as change and development in the "language" that the composer had at his or her disposal at any given moment. Awareness of the direction of historical musical change might also allow us to generate more context-sensitive and perspicuous generative principles of musical construction. In effect, rather than trying to define music per se, we might do better by defining it as what could be created as music at a given time in a given tradition. To take one example noted previously, there can indeed be music that involves only sequence and not pattern, but this possibility became available in the West only in the twentieth century, through the piecemeal rejection and deconstruction of some generative principles that previously excluded this option.

The second consideration holds that the tradition was too narrowly conceived anyway. The metaphor of a musical language can be misleading in many ways, not only because it can deflect attention from the historical relativity of musical modes of expression, as was just noted, but because it fails to notice how far beyond the immediate business of creating music that tradition extends. The tradition must be taken to include, for instance, the methods of making musical instruments, limitations to technical innovation in the field of instrument making, and how the use of instruments is transmitted.⁹ It will notice the development of notations and how this affected musical practice. Similarly, it should consider wider attitudes to the various purposes of music making. And

⁹ For discussion, see Godlovitch 1998.

the important point to realize is that, at every level, such matters were affected by conventions, pragmatic concerns, and considerations that were not at all musical or aesthetic.

As people who now regularly access music through mechanical reproduction devices, we are often indifferent to or ignorant of the practical business of making music and how that was regulated as only one domain within a wider social web. Only someone desensitized in this way could think that Platonic formalism could provide for music's definition. Music is not patterned sound, it is the bodying forth of sound through human action, and the relevant actions are conditioned not only by musical factors but by socio-cultural arrangements and resource availabilities that have nothing to do with music as such.

Musical "universals"

Earlier I identified the disparate nature of musical traditions as a barrier to a socio-historical definition of music: the difficulty lies in characterizing what shared characteristics make music traditions *music* traditions, despite their manifest differences. The hybrid approach to music's definition that I have advocated faces the same problem. If the course of a music tradition is molded arbitrarily by non-musical, socio-historical circumstances, so that distinct traditions need not closely resemble each other, how can they be jointly identified as musical traditions without begging the definitional question? The answer, I suggest, is by appeal to musical "universals," though I place the term in scare quotes because my account of these universals is perhaps not the orthodox one.

Psychologists and others have identified a number of musical universals. For example, music is based on tonal/modal scales that share a variety of features: octaves are inevitably recognized as equivalents; starting with the most stable, tonic note, the octave is divided into five to seven intervals; these intervals are not all equal; and the scale usually includes a major fourth or fifth

above the tonic.¹⁰ Or to take a different example, lullabies share certain melodic features cross-culturally (Unyk et al 1992).

The manner in which they are discussed often implies that musical universals apply to all music. This will be true, I suppose, of those that are a consequence of hardwired neural circuits. For example, the experience of octave equivalence is humanly universal and is shared with some non-musical animals, so is a likely function of auditory processing of a rather general kind. But I have already noted that not all music is based on tonal scales of the kind identified above as universal. Serial music in the Weberian style employs an atonal scale in which the octave is divided into twelve equal intervals. And the *slendro* scale of classical central Javanese music employs five equal intervals. Moreover, though the notion of universality is sometimes taken to entail a normative notion of musical naturalness, so that departures of the kinds just noted might be viewed as unnatural or unmusical, that attitude surely is not justified. Consideration of the variability of musical norms from culture to culture and reflection on the historical malleability in the Western tradition of what counts, say, as an unacceptable discord provide ample warning against underestimating the flexibility and arbitrariness of musical conventions and practices. In other words, we cannot define music simply in terms of its exemplifying the "universals" identified by psychologists.

A weaker but more plausible account of universality would tie it to what is common not to all music but to all musical traditions. On this view, at least some of the music in a tradition will conform to universal norms, even if the tradition also licenses other kinds or styles of music that do not. This weaker view is sufficient for our purposes: we can define musical traditions as those displaying the appropriate universals in at least some of their music, and music as what is produced in musical traditions. What is more, at first glance the proposition that all musical traditions include music displaying the appropriate universals appears to be true. For instance, the Western classical tradition

¹⁰ For discussion of these and other universal features of music, see Justus and Hustler 2005, McDermott and Hauser 2005, Higgins 2006, Stevens and Byron 2009, Thompson and Balkwill 2010.

includes much tonal/modal music based on scales with the previously mentioned "universal" features, and Javanese music also employs the *pelog* scale, which has unequal intervals.

Nevertheless, even this notion of universality might be unacceptably strong. Though I cannot think of a real-world example, it is conceivable that a tradition would come to reject types of music displaying universals – that is, other than those that are hard-wired as part of ordinary auditory analysis – and entrench styles that do not, so that none of its current music shares these universals with other traditions. Perhaps *pelog* comes to sound over-scented and effete to Javanese ears, so that they abandon it in favor of the exclusive use of *slendro*.

Here is the yet weaker relation that I expect to hold between musical traditions and musical universals: though musical universals may not be apparent in all, or even any, of the music in a developed musical tradition, it is reasonable to speculate that every tradition based its music on those universals at the outset. In other words, what unifies musical traditions as musical is their initial reliance on the kinds of features identified as "universal" to music. Accordingly, there is a direction to music's historical development. This maps onto the position I presented earlier: monodic music preceded polyphony, simple bipartite or repeated forms came before multi-part forms, and so on.

Further reflection on how musical universals arise demonstrates how psychologists' and neuroscientists' studies bear on the topic. As I have noted for the case of the experience of octave equivalence, musical universals can be by-products of processing biases in systems developed for ordinary, non-musical auditory processing. In addition, they may reflect widely shared music-specific preferences, either based on hardwired neural circuits generated through processes of evolution that saw the emergence of music as an adaptation in its own right, or, alternatively, based on music's incidental capacity to engage pleasure-inciting brain systems that evolved originally to motivate non-musical behaviors. But not all musical universals need be grounded in inherited, hardwired neurophysiological systems, and for this reason the need to consider the social histories of non-musical practices is again apparent. For instance, the universal structure of lullabies might reflect not strictly musical preferences but

exploitation of elements of infant-directed speech, which has distinctively musical qualities (Fernald 1992). Or to return to the more general, our species' evolved sociality and reliance on both cooperation and coordination might have conspired to create conditions under which all societies were bound to produce (some) socially shared music that universally displays features (of transparency, memorability, restricted melodic range etc. etc.) necessary for the group all to take part in its production.

Why not tradition alone?

I have argued that we can identify music traditions in terms of their histories. Reference to their histories can explain both what musical traditions have (or had) in common and how they can take such disparate paths with the result that they become very different. And we can also explain in this way what musical resources and possibilities are available to the music maker at any given time. But I do not think we can define music simply as whatever is produced against the background of such traditions.

The person who makes a wind chime might tune it to the scale sanctioned by his music tradition and he thereby contextualizes his creative efforts against the background of that music tradition. Nevertheless, I hold that wind chimes do not make music when intended for their standard use. Or to take another case, an artist working within a music tradition might react against it and turn to producing sound art. Her efforts are continuous with the music tradition and they refer to it via the act of repudiation. But she intends to make something distinct from music and I see no reason to doubt that she succeeds in this.

In many actual cases we will be able to sort the music from the non-music by appeal to structural principles. The non-music is not constructed as the music is. But philosophers' Doppelganger arguments can always be used generate defeating counterexamples: the wind blows in such a way that the chime sounds all the notes of a Mozart sonata, or two artists working independently will produce pieces with the same sound structure, though one aimed to write an avant-garde musical work and the other to create a piece of sound art.

The obvious move here is to appeal to the artist's intentions as determining whether music is the product. And I am happy to take this direction. But it is important to be clear that the social context enables the relevant intentions, which are to be thought of as institutional decisions rather than merely as acts of willing. If the wind chime maker intended that the chime produce music, his intention would fail. He does not have the credentials to bring off the result. And it would not be music that was sounded even if, by chance, the chime produced something structurally identical to the Mozart sonata. But if an established avant-garde composer included the wind chime in his next piece, its sounds would contribute to the musical content of that piece. We can follow Levinson and Kania in appealing to composers' intentions as authorizing that something is music, provided we are aware of the role limits and other social constraints relevant to determining the efficacy of such intentions.

Conclusion

The best bet, I think, for defining music would appeal to the intentional use of structural/generative principles viewed historically against the background of musical traditions that are construed sufficiently broadly that they take in not only the immediate practices connected with music making but also the cultural forces that facilitate and structure this. This involves acknowledging that many of these forces direct the development of musical traditions in culturally arbitrary directions. To explain how quite distinct historically developed music traditions all are *music* traditions, some account of the role of musical universals is in order. Rather than identifying the defining characteristics of all music, they are relevant for indicating the starting point common to the world's diverse array of musical traditions. To be successful, a definition of music must balance these various stories, defining music in terms of its traditions, the universal elements and common generative principles that these traditions licensed at their origins, the musical and non-musical pressures that constrain music's

development and enable its diversity, and the intentions and understandings of music makers and listeners.¹¹

Stephen Davies

University of Auckland

¹¹ For their helpful comments I thank, Julian Dodd, Andrew Kania, Justine Kingsbury, Jerrold Levinson, and Jonathan McKeown-Green.

References

- Ball, Philip 2010. *The Music Instinct*, London: Bodley Head
- Barrett, H. Clark and Kurzban, Robert 2006. "Modularity in Cognition: Framing the Debate," *Psychological Review*, 113: 628–47.
- Brown, Steven 2000. "The 'Musilanguage' Model of Music Evolution," in *The Origins of Music*, edited by N. L. Wallin, B. Merker and S. Brown, Cambridge, MA: MIT Press, 271–300.
- Cross, Ian 2007. "Music and Cognitive Evolution," in *The Oxford Handbook of Evolutionary Psychology*, edited by R. I. M. Dunbar and L. Barrett, Oxford: Oxford University Press, 649–67.
- Darwin, Charles 1880. *The Descent of Man and Selection in Relation to Sex*, London: D. Appleton. Revised and augmented edition. First edition 1871.
- Davies, Stephen 2001. *Musical Works and Performances: A Philosophical Exploration*, Oxford: Clarendon Press.
- . 2003. "John Cage's 4'33": Is it Music?" in S. Davies, *Themes in the Philosophy of Music*, Oxford: Oxford University Press, 11–29.
- . 2007. "Essential Distinctions for Art Theorists," in S. Davies, *Philosophical Perspectives on Art*, Oxford: Oxford University Press, 23–38.
- . 2010. "Perceiving Melodies and Perceiving Musical Colors," *Review of Philosophy and Psychology*, 1: 19–39.
- . Forthcoming. *The Artful Species: Aesthetics, Art, and Evolution*, Oxford: Oxford University Press.
- De Smedt, Johan and De Cruz, Helen 2010. "Toward an Integrative Approach of Cognitive Neuroscientific and Evolutionary Psychological Studies of Art," *Evolutionary Psychology*, 8: 695–719.
- Dissanayake, Ellen 2006. "Ritual and Ritualization: Musical Means of Conveying and Shaping Emotions in Humans and Other Animals," in *Music and Manipulation: On the Social Uses and Social Control of Music*, edited by S. Brown and U. Volgsten, Oxford: Berghahn, 31–56.
- Fenk-Oczlon, Gertraud and Fenk 2009-2010. "Some Parallels between Language and Music from a Cognitive and Evolutionary Perspective," *Musicae Scientiae*, 13: 201–26.

- Fernald, Anne 1992. "Meaningful Melodies in Mothers' Speech to Infants, in *Nonverbal Vocal Communication: Comparative and Developmental Aspects*, edited by H. Papousek, U. Jurgens, and M. Papousek, Cambridge: Cambridge University Press, 262–82.
- Fitch, W. Tecumseh 2005. "The Evolution of Music in Comparative Perspective," *Annals of New York Academy of Sciences*, 1060: 29–49.
- Godlovitch, Stan 1998. *Musical Performance: A Philosophical Study*, London: Routledge.
- Grosse, Ernst 1897. *The Beginnings of Art*, New York: Appleton.
- Hamilton, Andy 2007. *Aesthetics and Music*, London: Continuum.
- Higgins, Kathleen Marie 2006. "The Cognitive and Appreciative Impact of Musical Universals," *Revue Internationale de Philosophie*, 60: 487–503.
- Huron, David 2003. "Is Music an Evolutionary Adaptation?" in *The Cognitive Neuroscience of Music*, edited by I. Peretz and R. J. Zatorre, Oxford, Oxford University Press, 57–75.
- Justus, Timothy and Hutsler, Jeffrey J. 2005. "Fundamental Issues in the Evolutionary Psychology of Music: Assessing Innateness and Domain Specificity," *Music Perception*, 23: 1–27.
- Kania, Andrew 2010. "Silent Music," *Journal of Aesthetics and Art Criticism*, 68: 343–53.
- . 2011. "Definition," in *The Routledge Companion to Philosophy and Music*, edited by T. Gracyk and A. Kania, London: Routledge, 3–13.
- Koelsch, Stefan and Siebel, Walter A. 2005. "Towards a Neural Basis of Music Perception," *Trends in Cognitive Sciences*, 9: 578–84.
- Lerdahl, Fred and Jackendoff, Ray 1983. *A Generative Theory of Tonal Music*, Cambridge, MA: MIT Press.
- Levinson, Jerrold 1990. *Music, Art, and Metaphysics*, Ithaca: Cornell University Press.
- Levitin, Daniel J. 2006. *This is your Brain on Music: the Science of a Human Obsession*, New York: Dutton.
- McDermott, Josh and Hauser, Marc D. 2005. "The Origins of Music: Innateness, Uniqueness, and Evolution," *Music Perception*, 23: 29–59

- Mithen, Steven J. 2005. *The Singing Neanderthals: the Origins of Music, Language, Mind, and Body*, London, Weidenfeld & Nicolson.
- Patel, Aniruddh D. 2008. *Music, Language, and the Brain*, Oxford: Clarendon Press.
- . 2010. "Music, Biological Evolution, and the Brain," in *Emerging Disciplines*, edited by M. Bailar, Houston: Rice University Press, 91–144.
- Peretz, Isabelle and Coltheart, Max 2003. "Modularity of Music Processing," *Nature Neuroscience*, 6: 688–91.
- Pinker, Steven 1999. *How the Mind Works*, London: Penguin Books.
- Spencer, Herbert. (1966). *The Works of Herbert Spencer*, 21 Vols. Osnabrück: Otto Zeller.
- Stevens, Catherine, and Byron, Tim 2009. "Universals in Music Processing," in *The Oxford Handbook of Music Psychology*, edited by S. Hallam, I. Cross, and M. Thaut, Oxford: Oxford University Press, 14–23.
- Thompson, William Forde and Balkwill, Laura-Lee 2010. "Cross-cultural Similarities," in *Oxford Handbook of Music and Emotion: Theory, Research, Applications*, edited by P.N. Juslin and John Sloboda, Oxford: Oxford University Press, 755–88.
- Unyk, Anna M., Trehub, Sandra E., Trainor, Laurel J., and Schellenberg, E. Glenn 1992. "Lullabies and Simplicity: A Cross-cultural Perspective," *Psychology of Music*, 20: 15–28.
- Ziff, Paul 1953. "The Task of Defining a Work of Art," *Philosophical Review*, 62: 58–78.