Book Section:

Nature and culture; noise and music: perception and action.

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This brief chapter has three goals: 1) to introduce some ideas from ecological psychology into ecomusicology; 2) to use these to expose and critique assumptions we may have about the distinctions to be made between nature and culture, noise and music; and 3) to apply this ecological thinking to how we teach music, particularly in higher education.

A number of writers and musicians have helped highlight and critique the sharp distinctions between music and noise made in folk and academic aesthetics, or to show how such distinctions rest upon and indeed mirror wider sociological issues (Cage 1961, Schaeffer 1966, Shafer 1977, Attali 1985, Truax 2001). The idea of noise and its relationship to music have been brought to the forefront of writing on music (Hegarty 2007). I aim to critique this opposition by exploring how artistic and everyday modes of perception and action rest upon identical processes of sensitivity to information, thus questioning our assumptions about culture and nature as objects of study (Windsor 2004, Windsor and de Bézenac 2012). This ecological approach to music (Clarke 2005, Reybrouck 2005) embeds musicology within a semiotics bounded by the physicality of action and perception, and it provides a neat counterpoint to the relativism that Cook finds troubling (Cook 2000, Dibben and Windsor 2001).

IN THE BEGINNING WAS THE NOISE

Thoreau expressed puzzlement at the way most writers on music of his time begin their accounts with musical history rather than the sounds of nature (see also Titon <mark>chapter # this</mark>

volume).[1] The re-grounding of musical study in the sounds of the world can take many forms. One version of this rewriting of musical "history" comes from Troup, who claims that in order to have meaning, music refers to its source in nature not just to the domain of culture; moreover, natural and cultural influences on musical experience are in constant dialogue (1971, 5). Since then, many psychologists have explored evidence for a pre-musical, pre-linguistic source of later communicative sophistication (Dissayanake 2000), even pushing this back to pre-natal experience (Parncutt 2009). For Troup nature was not just inhabited by humanity. The cry of the baby, the sounds of the body are part of nature and become culture through their repetition and supplementation by the technologies of instrumentation, notation, and recording. Yet at the same time as nature and culture seem to collapse into one another, they remain in tension.

Many other contributions to this volume find different and complementary perspectives on the nature-culture binary. Edwards (chapter # this volume), in common with the view I present below, finds problematic the collapse of the dialectic between nature and culture (noise and music) that Troup implies, and Edwards reminds us of the need and potential within this binary for critique. Similarly, and more specifically, Hui writes of the contingency of the boundary between noise and music, how legal and behavioral responses to canned music illustrate the individual and collective ways we engage or not with sound (chapter # this volume). Most pertinently, though, both Boyle and Waterman (chapter # this volume) and Guyette and Post (chapter # this volume) relate to my attempt to provide an interface between what might be thought of as the science of ecology and its (ethno)musicological counterpart. Unlike them, however my theoretical and empirical sources are drawn from the field of ecological psychology and, to a lesser extent, critical theory. Before returning to the aesthetic and pedagogical consequences of interrogating the boundary between noise and

music therefore, I will provide a very brief overview of the relevant contribution of ecological psychology to the study of music.

ECOLOGICAL PSYCHOLOGY AND MUSIC

Two psychological traditions underpin the ideas in this chapter, both in different ways representing attempts by psychologists to study our perceptions and actions within the context of the environment. Both are far from mainstream and rest upon what has been termed the "radical empiricism" of William James (Heft 2001): 1) the ecological-behavioral science associated most often with the work of Barker (1968, 1978), and 2) the ecological psychology associated mot strongly with Gibson (1966, 1979). Both of these traditions, unlike the more dominant approaches of cognitive psychology, seek to study human behavior in relation to the environments in which it occurs – locating the processes that determine our behavior not in the mind but in the interactions between organism and environment.

Gibson's ecological psychology has been applied to music by a number of scholars, most notably Clarke (2005). Such work highlights the richness of the information furnished by objects and events in the environment and how these inform our perceptions. The idea that much of perception is "direct" and unmediated by social or cultural cognition is Gibson's most crucial (and most criticized) contribution to psychology. Others have attempted to study this empirically (Dibben 2001), discovering that some aspects of musical perception, and not just lower order properties such as timbre and texture, rely on direct rather than mediated perception. Gibson's theory of perception became increasingly relational as it developed: in order to explain how different organisms would perceive the same object or event to have different properties he proposed that we perceive "affordances," or possibilities for action

(1979). While these ideas have not been extensively applied to music, they nonetheless help us to understand how the possibilities for action offered by instruments interact with our developing bodies to constrain and guide music-making (Windsor and de Bezenac 2012).

The potential of Barker's work to inform musicology is ripe (although it is discussed only briefly in Windsor and de Bezenac 2012): his approach was not just to study human behavior in the environments in which it occurs – such as schools or even whole towns (Barker 1968, 1978) – but rather was an attempt to quantify the extent to which these environments determine behavior. Applied to musical improvisation, for example, such an approach seeks to define "behavior settings" (features of an environment that constrain and stimulate behavior, Heft 2001) and to show how these constrain and indeed stimulate the choices that musicians make (Burland and Windsor 2014). This approach is closest in method and outlook to Boyle and Waterman (chapter # in this volume), and below I show how Barker's eco-behavioral approach, as developed by Heft (2001), provides a complementary theoretical approach.

MUSICAL SETTINGS AND BEHAVIORS

From an ecological perspective, an understanding of music on an individual level results from studying the relationships between behaviors we judge to be musical and the settings in which they occur. A behavior setting is not just a physical environment, although physical properties of the environment are indeed relevant. It includes all the sources of information that constrain or afford behavior. Heft (2001, 292-294) divides these sources into three aspects of the setting: sociocultural practices, topographical features, and climatological properties. Information about sociocultural practices is available from the following: other

musical actors and their movements (whether sounding or not), audience members, objects and tools (instruments and associated technology), and instructions such as notated music. The topographical features of a behavior setting might include the absence or presence of raked seating, a stage, or a bar. Climatological features might seem less pertinent, but the temperature or lighting of a space can significantly impinge on the course of a musical performance.

Rather than describe a real performance here in these terms (the subject of Burland and Windsor 2004), it is instead helpful to consider a briefer example before returning to issues of nature and culture, and hence noise and music. Consider the behavior setting of a wedding: here the performers work in a mutual relationship by attempting to optimize the fit between their own musical choices and those of their employers and the guests. This might extend from repertoire to tempo: some of the information they use is available immediately (requests, failure to dance), some more distantly influential (some musicians would never play in a wedding band). The band might not be able to see the guests, due to poor lighting, and might find themselves unable to use all of their equipment due to cramped conditions. The crucial point here is that such environmental constraints are the factors that distinguish one performance from another (as in sport) and that provide the context for creativity:

> it is the existence of these constraints that create opportunities for invention and creativity. No two baseball games are identical. Throughout the unfolding of each game, the participants are presented with problems to address and ways available within the rules for addressing them (Heft 2001, 256).

NATURE-CULTURE; EVERYDAY AND MUSICAL

So, if ecological psychology helps us to locate and understand musical behaviors as an interaction between organism and environment, might it also help us to understand what is musical about music and how it differs from noise? Gibson's writing on aesthetic perception is understandably weak given his focus on affordances of objects and events. He characterizes artistic perception as attention to "information as such" (Gibson 1966, 255), as opposed to attention to information that informs action (attention to affordances, see Gibson 1977, 1979). For Gibson, perception is an active process of gathering information to guide action, and paying attention to the sensory qualities of objects and events is regarded as unnecessary, even somewhat luxurious. Such a position on art is congruent with a tension between everyday and aesthetic perceptions that is a common assumption in academic aesthetics; it is also an assumption used in folk aesthetics to dismiss art that plays with this tension (such as in the works of Marcel Duchamp or John Cage). Within this view, music is differentiated from noise by the intention of the perceiver, not by the interactions between perceiver and perceived: Gaver (1993a, 1993b) contrasts everyday listening (a mode of listening in which we attend to the potential functions of sounds) with attention to sensory qualities of frequency and time or even to higher order constructs such as timbre or tonality. The idea that we listen either musically or with everyday ears is more advanced than a position that objectifies distinctions between music and noise, but that idea does not capture the subtle dialectic between the natural and cultural dimensions of a musical sound. Adorno (leaving aside his assertions about "second nature") captures this tension most wonderfully in the dialectic of mimesis and rationality: musical sounds come from objects (instruments) and events (playing actions) but are organized in ways that signal the rationality of musicians (Adorno 1984). In psychological terms, Adorno is saying that when we hear music we attend

not only to information about the physical sources of sounds but also to information about the human agency that structures them.

Consider the difference between theories of noise that rest upon intentional framing and those that rest upon a more ecological approach; this difference is highlighted when one considers music that is constructed from everyday sounds. Schaeffer (1966), in his attempts to formalize musique concrète, proposed a way of listening that bracketed off the sources and significance of sounds from their consideration as sonic objects. In other words, he proposed a reduced listening that, for composers at least, was intended to distinguish musique concrète from a more generalized art of noises. Schaeffer investigated three further modes of listening (symbolic, indexical, and attentional aspects of sound) in great detail in his theoretical writing, but he ultimately proposed that composers should attempt to dislocate sound from reference, thereby mimicking the abstract aspirations of conventional instrumental and vocal music. The notion of a purely acousmatic music, in which the sources of sound are hidden by the loudspeaker, rests upon the active application of phenomenological bracketing: we can try to ignore the sources of sounds, but the sounds retain information about their sources (Windsor 2000). Moreover, even in such supposedly disembodied music, the compositional gestures that create music, and the behavior settings in which these gestures play out, are crucial to our perceptions (Windsor 2011, 2013).

In conventional vocal and instrumental music, the recording process thus serves at the same time to distort, conceal, and attract attention regarding the perceived origins of sounds. Our knowledge that recorded sounds originate in places and are produced by people is crucial to our perception that they are meaningful. Even in extreme examples in which we may mis-attribute such origins, and even when led to do so by skillful musicianship (such as in the

work of John Oswald), our perceptual systems hunt for information that resolves uncertainty (Gibson 1979), whether we like it or not. Music, therefore, is not a polar opposite of noise, nor is it simply the result of a Cageian intentional reframing of noise as music. Such phenomenological trickery is just that: the sounds of my body are potentially musical, and my response to them depends upon the behavior setting within which they are heard (such as the infamous anechoic chamber, or even just my having read about it in Cage 1961).

MUSIC EDUCATION – SONIC EDUCATION

How might this conceptual reframing – that is, of noise and music as outcomes of interactions with the environment – influence our thoughts on music education? At the start of my studies at City University, the first lecture I attended was delivered by Malcolm Troup. He began with the recorded sound of a baby crying, which was for Troup the origin of music, a proto-musical utterance. My first assignment was to adopt the persona of a "phononaut": to record environmental sound and present it to the group with a narrative. My first piece of assessed work was to write about the boundaries between noise and music.

The curriculum I followed in the 1980s was split into two halves: music in nature (acoustics, psychology, recording, etc.) and music in culture (ethnomusicology, music history, performance, composition, etc.). Troup's intention was to revisit the origins of musical culture in natural processes. Our first musicological course was an introduction to the different ways in which musical cultures had responded to their environments. Although this course was part of the "cultural" portion of the curriculum, many of the topics we studied highlighted the problem with this binary: the baby's cry was presented not just as proto-musical natural sound, but also as the biological basis for our cultural obsession with musical

communication. The entire curriculum reflected Troup's belief that music was a polyvalent activity that overlaid cultural and technical constraints upon a set of ever-present biological and pre-conscious imperatives.

This is not the way most students at universities learn about music, although such an approach might conform to national benchmarks in the United Kingdom (see HEFCE 2008). Most university music courses assume that music is a cultural phenomenon and train students to develop skills and knowledge that conform to or challenge cultural norms. Even at City University, with a curriculum designed to foreground music's situated nature, most study was focused around historical or geographical loci, and there was little explicit work to integrate knowledge synoptically. Students tended to focus on practical needs (such as the desire to acquire technical skills in performance or sound recording) or to choose options based upon the personalities of teachers. The continuity between music in culture and in nature was often lost very quickly as individual students found their own learning pathways. In many ways this is unproblematic, as long as such pathways are taken in an informed and independent manner. However, more often than not such narrowings of focus were the result of tastes developed during pre-primary, primary, and secondary education. The intention of that first lecture was to challenge such tastes, although it probably served to alienate as much as it stimulated.

How then might one better achieve an advanced musical education that better represents an ecological approach to making and listening to sounds? The key might come from the writings of Reed (1996), who draws on the work of Gibson as well as Dewey. Dewey's insistence that education should be based in experience is often associated with the world of early education, but he saw its value at all stages of development:

> The amount of external freedom which is needed varies from
> individual to individual. It naturally tends to decrease with increasing
> maturity, though its complete absence prevents even a mature
> individual from having the contacts which will provide him with new
> materials upon which his intelligence may exercise itself. The amount
> and quality of this kind of free activity as a means of growth is a
> problem that must engage the thought of the educator at every stage
> of development (Dewey 1938, 63, italics added).

Reed takes this further by placing the importance of first-hand, direct perception and action in the context of an increasingly mediated world:

> Any skill, from driving a car to playing an instrument to painting or
> acting, requires the ability to master one's experience. […] Clear,
> careful thinking begins with the ability to evaluate experience, to
> make distinctions, identify causes, and watch for patterns and trends.
> Moreover, doing any of these things well requires considerable time,
> effort and opportunity. In sum, it is not too much to say almost
> everything that makes life worth living begins in experience and
> grows with it (Reed 1996, 159).

Such an insistence upon naïve engagement with sound and sound-making seems at odds with tertiary education: one might normally expect that university students are beyond such direct engagement with the sounding world, and that they should be concerned with abstract, conceptual engagement with music. The dominant idea is that a musical education – whether in performance, composition or listening – becomes increasingly abstract as one develops. For example, the Piagetian approach of Swanwick (1988) stresses the developmental journey towards meta-cognitive, critical thinking that accompanies maturation and the need for

educators to match their interventions to such development. Swanwick and Tillman's (1986) empirical work suggested that as we develop we engage with sound in increasingly meta-cognitive, instrumentally sophisticated, and abstract ways.

However, even Swanwick (1988) acknowledges the need for direct and unmediated contact with the new in education at higher levels, although he arguably underplays the role of musical education in stunting (as well as developing) such opportunities and sensitivities. Swanwick (1988, 81-82) recounts and analyses the experience of a 17-year-old, exposed for the first time to Indian classical music; even for this sophisticated listener the developmental spiral from "sensory" to "evaluative" is recapitulated during the course of a performance. It is nevertheless unclear that conventional musical education prepares young people to refresh their sensitivities; a paradigmatic study by Pollard-Gott (1983) is but one example of empirical research that shows how musical training narrows and focuses our attention to sound in ways that may be difficult to redress (but see also Krumhansl 1979). Of course, it would be surprising if musical training did not narrow and constrain the cultural boundaries of music in a given setting, but at the level of tertiary education there is still a need to challenge and refresh our engagement with sound, whether as a listener or music maker. Otherwise it is hard to see how such education can go beyond the "mosaic" that Nettl identifies in order to become more of a "melting pot" where musics interact and develop through individual moments of unmediated contact (Nettl 1995, 82-111).

But how should such a direct relationship with sound be recovered in young adults? Enculturation is only partly a result of explicit instruction; much of our development of musical sensitivity is implicit and tacit (Pollard-Gott 1983). One method advocated in tertiary education is that of the eclectic and challenging curriculum, as exemplified by Troup (see

above), which does not start with conventional musical history. But such conscious engagement may do little to overlay the perceptual biases developed through engagement with a particular musical environment prior to tertiary education.

One alternative to a didactic approach is engagement with so-called "free" (and often collective) improvisation in higher education (Ford 1995, Clarke 1992, Lewis 2000). Clarke sees in improvisation

> the potential to act as a very powerful tool in musical development for
> a number of different reasons. First, it adds an active, procedural
> approach towards musical understanding to the potentially arid
> academicism of some kinds of traditional musicology. Second it
> encourages an active and questioning approach to musical
> performance, in contrast to the excesses of the conservatoire approach
> too concerned with technical excellence. Third, it brings together the
> skills of performing, listening and creating in contrast to the 'deep
> division of labour' that exists within the culture of Western classical
> music (Clarke 1992, 797).

Improvisation – or at least the non-idiomatic variety with which these authors engage (a broader vision for improvisation education is Lewis 2000) – is an opportunity to refresh our direct engagement with the objects, events, and settings of music. Instruments can be re-explored or visited for the first time in order to discover new affordances (Windsor and de Bézenac 2012); forms can be allowed to emerge from individual interactions (Borgo 2005, 2007); and spaces can be allowed once more to stimulate exploration and investigation of locations through active listening (Blesser and Salter 2007).

In conclusion I would like to suggest that a musical education should engage and re-engage with the boundary between musical and everyday listening and activity, and it should actively challenge students through tasks that provide opportunities to experience directly the sonic dimensions of events, objects, and spaces. In this way, musical education regains an active role in the arts and humanities, one that is not content to work within traditions. This is not to say that traditions are unimportant: they are important constraints and thus triggers for creativity, constituting the sociocultural practices that bound artistic practice. Nonetheless, it is through challenging such practices that education becomes more than instruction. To adapt Reed (1996, 163): The meaning of our lives will be found only when we make the effort to [listen] for ourselves." If one adds to this the link between such purposeful looking and listening (and touching) and the actions that result, and indeed the mutual relationships that pertain between action and perception – all of which can help higher education students understand the boundaries between culture and nature – then my call here is for active engagement within the world, not passive and mediate instruction about it.

WORKS CITED

Adorno, Theodor W. 1984. Aesthetic Theory. London: Routledge and Kegan Paul.

Attali, Jacques. 1985. Noise: The Political Economy of Music. Minneapolis: University of
     Minnesota Press.

Barker, Roger G. 1968. Ecological Psychology: Concepts and Methods for Studying the
     Environment of Human Behavior. Stanford: Stanford University Press.

Barker, Roger G. 1978. Habitats, Environments, And Human Behavior. Studies In Ecological
     Psychology And Eco-Behavioral Science From The Midwest Psychological Field
     Station, 1947-1972. San-Francisco: Jossey-Bass.

Blesser, Barry, and Salter, Linda-Ruth. 2007. Spaces Speak, Are You Listening? Experiencing Aural Architecture. Cambridge, Mass.: MIT Press.

Borgo, David. 2005. Sync or Swarm: Improvising Music in a Complex Age. New York: Continuum.

Borgo, David. 2007. "Free Jazz in the Classroom: An Ecological Approach to Music Education." Jazz Perspectives 1(1): 61-88.

Burland, Karen and W. Luke Windsor. 2014. "Moving the Gong: Exploring the Contexts of Improvisation and Composition." In Coughing and Clapping: Investigating Audience Experience, edited by Stephanie Pitts and Karen Burland, 101-114, Farnham: Ashgate.

Cage, John 1961. Silence: Lectures and Writings. Middletown: Wesleyan University Press.

Clarke, Eric F. 2005. Ways of Listening: An Ecological Approach to the Perception of Musical Meaning. Oxford: Oxford University Press.

Clarke, Eric F. 1992. "Improvisation, Cognition and Education." In Companion to Contemporary Musical Thought, Vol. 2, edited by John Paynter, Tim Howell, Richard Orton and Peter Seymour, 787-802. London and New York: Routledge.

Cook, Nicholas. 2000. Music: A Very Short Introduction. Oxford: Oxford University Press.

Dewey, John. 1938. Experience and Education. New York: Touchstone. Reprint 1997.

Dibben, Nicola J. and W. Luke Windsor. 2001. "Constructivism in Nicholas Cook's Introduction to Music: Tips For a 'New' Psychology Of Music." Musicae Scientiae 5(2): 43-50.

Dibben, Nicola J. 2001. "What Do We Hear When We Hear Music? Music Perception and Musical Material." Musicae Scientiae 5(2): 161-194.

Dissayanake, Ellen. 2000. "Antecedents of the Temporal Arts in Early Mother-Infant

    Interaction." In The Origins of Music, edited by Nils L. Wallin, Bjorn M. Merker, and

    Steven Brown, 389-410. Cambridge, Mass.: MIT Press.

Ford, Charles C. 1995. "Free Collective Improvisation In Higher Education." British Journal

    of Music Education 12: 103-112.

Gaver, William W. 1993a. "What in the World Do We Hear? An Ecological Approach to

    Auditory Event Perception." Ecological Psychology 5: 1-29.

Gaver, William W. 1993b. "How Do We Hear in the World? Explorations in Ecological

    Acoustics." Ecological Psychology 5: 285-313.

Gibson, James J. 1966. The Senses Considered as Perceptual Systems. Boston: Houghton

    Mifflin.

Gibson, James J. 1977. "The Theory of Affordances." In Perceiving, Acting, and Knowing:

    Toward an Ecological Psychology, edited by Robert Shaw & James Bransford, 67-82.

    Hillsdale, NJ: Lawrence Erlbaum Associates.

Gibson, James J. 1979. The Ecological Approach to Visual Perception. Boston: Houghton

    Mifflin.

HEFCE. 2008. Subject Benchmark Statement: Music. Gloucester: HEFCE.

Heft, Harry. 2001. Ecological Psychology in Context: James Gibson, Roger Barker and the

    Legacy of William James's Radical Empiricism. Mahwah, NJ: Lawrence Erlbaum.

Hegarty, Paul. 2007. Noise/Music: A History. New York/London: Continuum.

Krumhansl, Carol L. 1979. "Quantification of the Hierarchy of Tonal Functions Within a

    Diatonic Context." Journal of Experimental Psychology: Human Perception and

    Performance 5: 579-594

Lewis, George. 2000. "Teaching Improvised Music: An Ethnographic Memoir." In Arcana:

    Musicians on Music, edited by John Zorn, 78-109. New York: Granary Books.

Nettl, Bruno. 1995. Heartland Excursions: Ethnomusicological Reflections on Schools of Music. Urbana and Chicago: University of Illinois Press.

Parncutt, Richard. 2009. "Prenatal and Infant Conditioning, the Mother Schema, and the Origins of Music and Religion." Musicae Scientiae 13: 119-150.

Pollard-Gott, Lucy. 1983. "Emergence of Thematic Concepts in Repeated Listening to Music." Cognitive Psychology 15: 66-94.

Reed, Edward S. 1996. The Necessity of Experience. New Haven/London: Yale University Press.

Reybrouck, Mark. 2005. "A Biosemiotic and Ecological Approach to Music Cognition: Event Perception between Auditory Listening and Cognitive Economy." Axiomathes 15: 229-266.

Schaeffer, Pierre. 1966. Traité des objets musicaux. Paris: Seuil.

Shafer, R. Murray. 1977. The Tuning of the World. New York: Random House.

Swanwick, Keith. 1988. Music, Mind and Education. London/New York: Routledge.

Swanwick, Keith, and June Tillman. 1986. "The Sequence of Musical Development: A Study of Children's Composition." British Journal of Music Education 3: 305–339.

Thoreau, Henry David. 1961. Journal. Edited by Bradford Torrey and F. H. Allen. 14 volumes in 2. New York: Dover.

Troup, Malcolm. 1971. "Music, the Magic of the First Environment." The Guildhall School of Music and Drama Review: 3-7.

Truax, Barry. 1984. Acoustic Communication. New Jersey: Ablex.

Windsor, W. Luke. 2000. "Through and Around the Acousmatic: the Interpretation of Electroacoustic Sounds." In Music, Electronic Media and Culture, edited by Simon Emmerson, 7-35. Farnham: Ashgate.

Windsor, W. Luke. 2004. "An Ecological Approach to Semiotics." Journal for the Theory of Social Behaviour 34: 179-198.

Windsor, W. Luke. 2011. "Gestures in Music Making: Action, Information and Perception." In New Perspectives on Music and Gesture, edited by Anthony Gritten and Elaine King, 45-66. Farnham: Ashgate.

Windsor, W. Luke. 2013. "The Transforming Power of the Acousmatic: The Perceptual Traces of Compositional Gestures." In François Bayle: Die Klangwelt der akusmatischen Musik, edited by Marcus Erbe and Christoph von Blumröder, 143-150. Köln: Signale aus Köln.

Windsor, W. Luke, and Christophe de Bézenac. 2012. "Music and Affordances." Musicae Scientiae 16: 102-120.

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[1] In his entry for March 8, 1842, Thoreau wrote, "Most lecturers preface their discourses on music with a history of music, but [they might] as well introduce an essay on virtue with a history of virtue. As if the possible combinations of sound, the last wind that sighed, or melody that waked the wood, had any history other than a perceptive ear might hear in the least and latest sound of nature!"