

Music, science, and post-positivist pluralities

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Ian Cross

ic108@cus.cam.ac.uk

<http://www.mus.cam.ac.uk/~cross/>

In the interpretive, postmodern, or even post-postmodern (post²modern) view, any approach to music that embraces science must be suspect, it seems. A reliance on science stands revealed to the interpretive and postmodern gaze as positivist, monolithic and hegemonic, reductive and oppressive, enforcing its tenets by suppressing, neglecting or disdaining the 'otherness' of the objects of its discourse.

And something approximating to a postmodern view now appears to be the musicological norm (see. e.g., Cook & Everist, 1999); the universal slogan is now 'Plurality and performativity', whether or not the players are willing to wear the postmodern team colours. And rightly so: the idea that a unitary and all-weather theory can account for all the musics and musical ontologies that have crept out from the conceptual undergrowth of the last half of the twentieth century is surely ludicrous. Plurality has had to become a fact of musicological life. Plurality in the Bakhtinian heteroglossia that can be read as constituting the 'works' of the western 'canon', from the *Roman de Fauvel* through *Louie louie* to *Notations pour orchestre*, plurality in the profusion of microcultural, intercultural and supercultural interpretations of the musics that press on us even as the institutions that embodied the western canon, the classical music recording industry, the full-time professional symphony orchestra, collapse and wither away.

For music theory this is perhaps not such a problem; even when the theoretical focus remains fixed on the single 'work', for theory that work may now be neither autonomous nor univocal. But it puts 'scientific' music psychology in something of a predicament. It seems much more feasible to posit theories of musics than it is to postulate psychologies of musics; in the former case any

losses in existential certitude are more than compensated for by possible gains in complexity, richness and depth, but in the latter case the generalisability that endows science with its explanatory power appears to evanesce.

But musics, though plural, have materiality, and musicality has some unitary corporeality in human behaviour and its traces; the Bakhtinian heteroglossia of musics are being voiced by one recently-emerged species, *Homo sapiens sapiens*. From a materialist perspective, music as humanly-produced sound and action, music as patterns of central nervous system activity and music as patterns of socio-cultural interaction are in principle connected; human life and behaviour is not discontinuous with human biology, though the relationship of the one to the other is far from linear or deterministic (for an up-to-date overview of attempts to relate music to human biology see Zatorre & Peretz, 2001). From a materialist perspective the exploration of music requires interpretive frameworks for human behaviours that have explanatory powers predicated on something beyond the specific circumstances of any particular act of interpretation. Of the available frameworks that purport to deal with generalisations concerning human behaviour - philosophy, economics, politics etc. - the one that seems to offer the broadest explanatory scope is science, or rather, the sciences, for, as we shall see, to speak of 'science' is as problematic as to speak of 'music'.

Pace Brown & Dempster's (1988) paper, 'The scientific image of music theory', and *pace* the stances of many of their respondents, to adopt a scientific perspective on music theory or indeed on music is not to embrace a positivist, unitary or hegemonic perspective (as seems implicit in Brown & Dempster's valorisation of Hempel's deductive-nomological model). The notion that there is a single formally expressible set of principles that define and constitute science or scientific method is simply untenable in the context of recent philosophies of science. Moreover, the idea that the generalisability of a scientific perspective entails an ontological commitment to reduce the object of the scientific gaze to the terms of basic science is at best questionable, at worst plain silly. Indeed, the

adoption of an ontologically reductionist stance by scientists (usually physicists) can be seen as an attempt to assert hegemonic status within the sciences themselves.

That the sciences deal with the general does not mean that the sciences reduce to the general: to apply science to music is not to reduce music to the scientific theories of physics, psychophysics or psychology. Science is not an objective, unitary and reductive enterprise; it has unarguably societal (Kuhn, 1962; Feyerabend, 1981) and experiential (Lakoff, 1987) dimensions, and is made up of multiple and mutually irreducible frameworks of exploration and understanding (Rose, 1996; Fodor, 1998). For example, scientific accounts of the experience of a musical performance might be couched in terms of acoustics (dealing with the physical systems and dynamics that constitute the musical sound), or psychoacoustics (dealing with the principles that govern the ways in which the sounds are registered by the human auditory system), or cognitive psychology (dealing with the regularities that the mind may interpret in or abstract from the sound that is registered). But while these multiple frameworks might be mutually irreducible (e.g., the regularities that mind may abstract in the experience of musical sound are unlikely to be specifiable in, or reducible to, acoustical terms), they are commensurable. The theories, procedures, descriptions and predictions that different scientific accounts adhere to and provide are at least understandable in respect of each other (see Lakoff, 1987, p322), even if they might not be translatable one to another (as Rose, *ibid.*, p89 would have it).

As Fodor (*ibid.*, p22) puts it, 'Science postulates the kinds that it needs in order to formulate the most powerful generalizations that its evidence will support', and the historical application of this methodological instrumentalism has resulted in a dense constellation of inter-relatable procedures and understandings of unparalleled predictive and explanatory power. Unparalleled, though, neither omnipotent nor absolute...

Simply, the sciences offer ways of explicating aspects of complex human behaviour - including

social behaviour - that are differently ramified from, and more comprehensively grounded than, those understandings that emerge from interpretive or postmodern approaches. There is no *a priori* reason to exclude science from the enterprise of understanding musical behaviours, and indeed certain aspects of those behaviours might only be explicable in terms of science - yet science itself provides no grounds for believing that its theories and findings should be accepted as supplanting all other possible frameworks of understanding for all possible purposes.

Only when this caveat is ignored do the sciences become reductive and absolute, but at that point they slip from 'science' into 'scientism'. Within musicological discourse the charge of 'scientism' has been sometimes used in a way that appears to equate it with the charge of formalism (as Born, 1995, appears to do at several points in her otherwise insightful narrative of IRCAM - see pp51-55 in particular). But if 'scientism' is to mean anything it would be most appropriately employed to refer to the co-optation of science's supposed foundational (and thus intellectually hegemonic) status as an element of critical and theoretical rhetoric in the post-positivist era in which musicology and the sciences find themselves. As such it can be analysed, ignored or condemned. But 'scientism' has little to do with 'science' *per se*, but rather with contemporary social images of science; as such it is an aspect of discourse, at best rhetorical, at worst fraudulent, but always employed for ideological ends (sometimes even commercial - see <http://www.advancedbrain.com> for a stunning display of musico-scientistic snake-oil peddling).

In a pleasing instance of symmetry, Sokal and Bricmont's castigation in their 'Intellectual impostures' (1998) of the sham 'science' embodied in much postmodern writing can be read in part as an attempt to co-opt scientism's evil postmodern twin, unreflective reflexivity, into a debate that is internal to science itself by seeking to paint certain prospectively scientific theories (particularly those of Prigogine) with a brush loaded with postmodernist pollutants (see Schaffer, 2000). Indeed, from Sokal and Bricmont's position postmodernism could be

regarded, like science itself, as an abstract tradition in Feyerabend's (1981, p7) sense of the term, 'too poor to reflect the peculiarities of any particular tradition and thus seem[ing] to be tradition independent'; after all, as D'Andrade (1995, p251) puts it, postmodernism can be interpreted as 'a theory in which there is only one real system, the power system', a position from which a postmodern view appears even more limiting than is the ontologically reductionist version of 'science'.

But this is a bogus view of postmodernism; even at their least convincing, interpretive and postmodern approaches grapple with issues that the sciences are just beginning to recognise as their most intractable problems, those of comprehending human cultures and societies. After all, music is not a property of an individual human being but of groups of individuals. Interpretive and postmodernist approaches to music can articulate the embeddedness of music in motivated human interactions, reaffirming and re-representing the cultural complexity that enables and sustains the interpretation and experience of musics; the sciences of music ignore the societal dynamics that construct and sustain musics at the risk of mistaking the individual and the contingent for the generalisable and principled.

Setting aside the brouhaha that accompanied Sokal and Bricmont's (ultimately turgid) tirade, postmodernist nonsense about science matters little to the conduct of the sciences; after all, most scientists don't read *Social Text* (the site of Sokal's original hoax). The problem is that most scientists don't encounter any literature that embodies interpretive or postmodern stances; in the sciences, as in the world of espionage (as Bossy, 2001, p139, notes) 'Nobody pays good money for pieces of discourse'. Hence scientists are often willing to subscribe - albeit implicitly - to unfeasible notions of epistemological and ontological reductionism which factor culture out of the domain of enquiry

For any engagement with music this is simply an unfeasible position. The sciences of music need to be informed by the plural visions, divergent hearings and heterogeneous voices of contemporary musicology and theory. But musicology can inform

the sciences only if it takes them for what they are rather than for their social image. The methods and claims of science require continually to be interrogated from postmodern, post-postmodern and even post-post-postmodern perspectives. From an academic perspective science is not the only game in town but it's certainly the one with the most muscle, political and economic and ideological. But if we post³modernists don't know the rules we can't even be knowledgeable spectators, never mind active players (I say nothing, however, of owners...).

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