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Music as a Medium of Communication. Two Visions of Musicology

Joint introduction

We formulated the title of our dialogue with a certain dose of premeditation, particularly in respect to its second element, namely the 'two visions of musicology' – a vision of 'humanistic' (philosophical, literary, anthropological in some sense) musicology and a vision of 'scientific' (in some sense) musicology, i.e. close to the natural sciences.

The word 'vision' appears here for several reasons. Firstly, it seems to us to be non-limiting, inviting joint reflection rather than the settling of things one way or another. Secondly, this 'visioning' contains an irrational element, closer to one of us and further from the thinking of the other (you will soon see who is whom yourselves). Thirdly, by speaking of 'two visions of musicology' we wish to show the two poles between which extend the myriad stances and opinions, closer now to one, now to the other, of the 'visions'. It is a question of undoubted interest as to whether these two visions have any chance of meeting and how this might come about. This is important, since the premise of the unity of science has for centuries been not only pondered but also – by many – desired and treated as a natural state to which we are heading.

Recommending here both 'visions of musicology', we are consciously adding our voices to the discussion on the status of science, both in methodological terms and also with regard to the way we understand the object of inquiry. As we know, this debate – heated and fertile – lasted throughout the twentieth century and in recent years has been gathering pace, due to these very deliberations over the desideratum of the 'unity of science' carried on by philosophers, physicists and biologists. We ask therefore: is science, and humanistic science in particular (how to under-

stand humanistics is another, albeit certainly not secondary, matter), a cold, dispassionate search for the 'truth', the collecting of empirical data, disciplined study accompanied by a faith in objective procedures? We ask what is the status of values and value judgments in scientific procedure? Does rationality in science always constitute its overriding criterion? Or perhaps it is just the opposite: that science is beset by fundamental doubts as to the objectivity of learning, that the scholar lives and works with a permanent uncertainty regarding the tools which he employs, that he is not immune to seeking connections between that which is scientific and that which is a e s t h e t i c; a e s t h e t i c, and thereby elusive to science.

These two approaches to science arise out of the fundamental and – as some philosophers claim – ineluctable ambivalence of the world and its cognition, as described through the metaphor of Athens and Jerusalem, crystal and flame, or philosophy and novel.

The schematic dual visioning of musicology that we signal in our paper may serve two strategies for the interpretation of the situation of contemporary science and in particular of the relationship between the humanities (in a certain sense) and the natural sciences. It may, therefore, reinforce the diagnosis formulated in 1959 by Charles Percy Snow in *The Two Cultures and the Scientific Revolution*, or pertain to the proposition which John Brockmann called the 'third culture' (*The Third Culture: Beyond the Scientific Revolution*, 1995). Snow put forward the thesis that humanists – whom he called 'literary intellectuals' – are incapable of reaching agreement with naturalists, representing a scientific point of view, even though science bears a growing influence on our lives.

The causes of this state of affairs are manifold, yet Snow's text ignited a discussion lasting several years, which Brockmann summed up in his concept of a 'third culture'. The critique of the humanities and humanists that was cultivated by him and his followers is based on the following observations: humanists deal with 'texts' (language) and not reality; thus they are characterised by a non-empirical approach; they build complex linguistic structures that are incomprehensible to anyone but themselves; they are unfamiliar with the achievements of contemporary science, by the same token advocating an obsolete educational canon. What is more, the still erroneous and harmful – in the opinion of the advocates of the 'third' way – diagnosis of Max Horkheimer and Theodor W. Adorno, whereby science and the whole project of the Enlightenment is just another historical example of enslavement and totalitarianism, is perpetuated.

Does the 'third' culture, which promotes in broad social circles the latest scientific breakthroughs, seek to answer the most important questions

about the world and human existence? Does it have any chance of reaching the 'literary' humanists it so criticises? Does this also apply to musicologists and are we at all interested in it? Or do we not prefer, as Philip V. Bohlman writes forcefully, to flee the many problems posed by contemporary scholarly thought, maintaining that the specificity of our subject protects us against the turbulence to which other humanities are susceptible?[1]

Praise be doubt!
Bertold Brecht

Maciej Jabłoński

Is musicology, such as we practise it and on which we reflect, a science? One may refrain from answering this question at all or else answer it in many different ways, although it is certain that none of them would satisfy us: that musicology is a science because such has been the convention for over a century; that it is so because it has its own peculiar subject, methods and language; that it is so because no-one sufficiently serious has given sufficiently serious proof to the contrary. And anyway, perhaps it is good that musicology is a science, and perhaps it would not be at all bad if it turned out not to be.

I am reminded here of a most enlightening debate about aesthetics which was once carried on by Stefan Morawski and Leszek Kołakowski. When the time came to cast onto the scales of the dispute the question as to the scientific status of aesthetics, the philosopher replied to the aesthetician: 'In respect to the accusation that aesthetics holds illegitimate pretensions to the rank of a science, I consider the charge to be clearly justified; although this does not at all mean that aestheticians should abandon their work'.[2] Of course, I will be able to state neither once and for all that musicology is a science nor – even more so – that it is not, and I would doubt you would even expect me to. I do consider, however, that it is worth stating what, in my opinion, musicology involves.

Musicology is one of those humanities which may be called 'open', in the sense of Rainer Maria Rilke's postulate from his *Letters to a Young Poet*: 'we must assume our existence as broadly as we can; everything, even the unheard-of, must be possible in it'.[3] In this sense, such a musi-

[1] Philip V. Bohlman, 'Musicology as a political act', *Journal of Musicology* 11/4 (1993).

[2] Leszek Kołakowski and Stefan Morawski, 'Dialog o sensowności uprawiania estetyki' [Dialogue on the sense of cultivating aesthetics], in *Przekraczanie estetyki* [Beyond aesthetics], ed. Zofia Rosińska et al. (Warsaw, 2003), 15.

[3] Rainer Maria Rilke, *Letters to a Young Poet*, trans. M. D. Herter Norton (New York, 1962), 67.

cology is radically pluralistic. On the one hand, it strengthens those points of view which treat of music as of a phenomenon oriented strongly towards Transcendence (like all art), towards the Infinite (Arthur Schopenhauer's utterance that music will endure after the world has ended), music as 'Ineffable' (Vladimir Jankelevitch), as Mystery (Hans Kox, Władysław Stróżewski) or as a phenomenon with an utterly divine status (the writer Hertmut Lange's opinion that Gustav Mahler's *Das Lied von das Erde* is a God). This last conviction is also expressed by Emile M. Cioran's opinion that 'If God had made our world as perfect as Bach made his divine...'.[4]

These valid, albeit devoid of direct reference to empirical knowledge, ruminations on the essence of music are, of course, supplemented by musicology with the interpreting of artistic conventions regarding the representation of the transcendent in music or the manifesting, for example in a symbolic way, of that which is absent. Thus musicology is closest here to such philosophical thinking which posits the ineffectiveness, or at least the incompleteness, of the solutions proposed by 'science'.

On the other hand, musicology as an open humanity does not exclude encounters with the natural 'sciences', which have their own answers to the questions as to what music is, whence flow its sources and why man makes music. However, there are many difficulties to overcome before settling on the common points of these encounters. The first and most crucial difficulty is linked to reduction concerning the ontology of the subject. The question of how we usually understand music, and especially how we comprehend the musical work – as a distinct and unitary phenomenon – and its axiology, is for humanists a matter of culture and history rather than, for example, biology. For scientists, reduction as a rejection of history is a precondition for adopting a scientific approach, and the multiplicity, diversity and interpretations of the notions and categories provided by history are treated as secondary. What is more, such an understanding of reduction forces us into the thesis that the unity of science can only be effected on the basis of the achievements of natural science and not according to the solutions adopted by 'literary' intellectuals, as Snow would put it.

Another problem, which I shall merely signal here, is the premise of cognitive infinitism in the humanities versus cognitive finitism in the natural sciences, with the proviso that not all physicists or biologists share the view of the conceivable end to the cognitive process, which

[4] François Feto, 'E. M. Cioran, 'Wątpię, więc jestem' [E. M. Cioran, I doubt, therefore I am], *Zeszyty Literackie* 54 (1996), 87.

would lead to the constituting of a 'theory of everything'; the radical Stephen Hawking states, however, that the end of science is nigh.

In the humanities and in musicology, as I understand them here, the principle of infinitism pertains, since we will never obtain watertight and ultimate knowledge about art, be it only for the reason that art possesses the singular property of successfully refuting knowledge on its subject and that, as Jean-François Lyotard perversely declares, it is a matter for the future. What is more, we are not entirely certain that we would like to achieve such an ultimate knowledge about art. Quite the opposite is true of the natural scientists, who dream, and are even sure, that they will possess such an ultimate and all-embracing knowledge about man and the world. Edward O. Wilson, in his brilliant book *Consilience. The Unity of Knowledge*, writes on this matter: 'A few researchers, and I am one of them, even think they know the approximate form the answer will take'.[5]

And a third question, as Lee Smolin states: 'for humanists, the starting point for intellectual activity is a text and it is also its effect', and 'the basic method of scientific inquiry is interpretation'.[6] This accusation recurs very often among the architects and adherents of the 'third culture', and it concerns primarily the question of empirical knowledge. Science, so they maintain, deals with reality and not the fictional products on its subject that arise from the cogitations of philosophers and humanists. Natural science does not accept empirically unsubstantiated humanistic notions and is wary of the humanistic predilection for language which admits of nebulousness, vagueness and a limited lack of precision, unacceptable in science.

Science's opposition to the humanistic concentration on language results from the humanists' fundamental premise that it is impossible to arrive at the 'whole truth' about art. We are left with the salutary conflict of interpretations, not 'constrained' by methodologies, which lessen, at least a little, the distance that separates the humanities from the sciences. The interest in language, which conveys to only a minimal degree the essence of art, contains a moment of fascination with its creativeness, with language's ability, not so much to represent, as to create reality. For there exists the conviction, nurtured from Hellenism to contemporary times, that the reality of the word 'as such' is governed by the principle of freedom. Osip Mandelstam writes: 'Nominalism, that is, the conviction of the reality of the word, is the animating spirit of language. [We are deal-

[5] Edward O. Wilson, *Consilience. The Unity of Knowledge* (New York, 1998), 138.

[6] Jerzy Kowalski-Glikman, 'O fizykach i humanistach' [On physicists and humanists], *Wiedza i Życie* 2 (2000) [http://archiwum.wiz.pl/2000/00021400.asp].

ing here with the principle of] the inner freedom which is proper to it [...]'.[7]

The fuzziness and imprecision of many of the notions which the humanities have wielded through the centuries, moulding and reinterpreting them, is also due to the fact that art is ascribed the possession of 'qualities' of a special kind, known as 'aesthetic qualities'; to complicate the matter still further, the philosophers are not sure how these 'qualities' exist. But this is a weighty problem of an ontological and axiological nature, since it is upon these 'qualities' that aesthetic values are constructed. And these values, in spite of everything, should not be trivialised in relation to art, although science or, in former times, analytical philosophy, in its restrictive variant, endeavoured to place them beyond the bounds of its interest or else reduce them to other values underpinning art, e.g. physical properties.

Among these 'qualities', Roman Ingarden included 'nobility', baseness', 'tragedy', 'frightfulness', 'mystery', 'fiendishness', 'holiness', 'sinfulness', 'hellishness', 'ecstasy', 'grotesqueness', 'exaltedness', solemnity', 'grace', 'lightness' and 'heaviness'.[8] In more or less complex 'life' and also 'aesthetic' situations, they constitute a source of the value of art, for instance 'tragic hell', the 'hellishness of an act', as in the *acte gratuit* in André Gide, Milan Kundera's 'lightness of being' or Italo Calvino's philosophy of literature, the 'ecstasy' of Saint Theresa depicted by Gianlorenzo Bernini or the 'mystery of the genius' of Wolfgang Amadeus Mozart as expressed by Peter Kivy, Norbert Elias or Prince Tomasi di Lampedusa.

But let us move on to the difference of approach between Piotr Podlipniak and myself. Podlipniak states that, from the point of view of science, music *is* a medium of communication, whereas I would tend to say that 'my' humanistics, based on premises other than 'scientific', (only) *maintains* that music is a medium of communication. This wording of the two approaches signifies that science (in Podlipniak's sense) *has* proof that music's capacity to communicate is fundamentally – we would say naturally – grounded, that science is able to demonstrate the existence of the natural mechanisms which are responsible for this communication. Humanistics (as I understand it), meanwhile, (only) *maintains* that it has proof of this 'capacity' of music to communicate, that ascribing this 'capacity' to music is an expression of historically changeable (metaphysical, cultural-social and axiological, including artistic and theoreti-

[7] Cit. after Władysław Panas, *W kręgu metody semiotycznej* [In the sphere of semiotic method] (Lublin, 1991), 111.

[8] Roman Ingarden, *Studia z estetyki* [Studies on aesthetics] (Warsaw, 1970), vol. 3, 290–293.

cal) needs which underlie the specific conventions that substantiate this communicational aspect of music.

For Podlipniak, it is nature that is behind this 'communicativeness' of music; for myself, it is culture. However, given that, as the representatives of science would have it, the latter is founded on the former, scholarly research into the foundations of music's 'communicativeness' falls to the natural scientists and not – in Snow's terms – to 'men of letters'.

Piotr Podlipniak

Today, thanks to new technologies,[9] among other things, the inquiry of the natural sciences is also encroaching into areas previously reserved exclusively for the humanities, as traditionally understood. One of these is the phenomenon of consciousness, which is increasingly subjected to attempts at explanation based solely on naturalist methods,[10] without recourse to humanistic narrative that is frequently filled with ill-defined notions and unverified opinions. The effects of research of this kind are today so weighty and significant that they cannot be ignored. Among the research achievements which would appear to carry particular influence in accounting for phenomena directly related to the culture of man as traditionally understood, one should single out above all achievements in the fields of evolutionary biology, genetics, neurobiology and the cognitive sciences. These compel us to revise views that were generally accepted in the human sciences throughout the greater part of the twentieth century and indicate that the naturalist and humanist perspectives, which are often treated separately in research into cultural phenomena, are so closely interconnected that explanation in terms of just one of the two is at best incomplete and at worst erroneous.[11]

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[9] It is technological progress that is perhaps the most convincing testimony to the huge success achieved in the twentieth century by the natural sciences – a success which was, and is, possible thanks to these sciences' exceptionally effective powers of explanation.

[10] See Francis Crick, *Astonishing Hypothesis: The Scientific Search for the Soul* (New York, 1990); Gerald M. Edelman, *Bright Air, Brilliant Fire: On the Matter of the Mind* (New York, 1992); Roger Penrose, *Shadows of the Mind: A Search for the Missing Science of Consciousness* (Oxford, 1994); Włodzisław Duch, 'Neurokognitywna teoria świadomości' [A neurocognitive theory of consciousness], in *Studia z kognitywistyki i filozofii umysłu. I. Subiektywność a świadomość* [Studies from the cognitive sciences and the philosophy of mind. I. Subjectivity and consciousness], ed. Wioletta Dziarnowska and Andrzej Klawiter (Poznań, 2003), 133–154; Derek Denton, *The Primordial Emotions. The Dawning of Consciousness* (New York, 2005).

[11] Jerome H. Barkow, 'Introduction: Sometimes the Bus Does Wait', in *Missing the Revolution: Darwinism for Social Scientists*, ed. Jerome H. Barkow (New York, 2006), 3–59, at 5.

A clear shift in the way science is practised is already manifest in such fields as psychology or linguistics, where a considerable increase in interest can be observed in such an interdisciplinary approach that demands the reduction or explanation of phenomena and that makes increasing use of naturalist research methods, such as genetic research, imaging the work of the brain during the performance of specific mental operations, or computer simulations of these operations. No one is surprised anymore at the existence of such hybrid naturalistic-humanistic disciplines as evolutionary psychology, behavioural genetics, sociobiology or neurolinguistics. But more crucial than this undoubtedly fascinating marriage is the change in the way we understand culture, which today is seen as one of the two kinds of information – alongside genetic information – present in the world of living organisms.[12] What is more, we already know for certain that these kinds of information are not so wholly independent of one another as some popular scientists of the twentieth century wished to believe.[13] 'Genetics, the environment, the brain, and cognition (and behaviour) interact with each other in complex ways'.[14] A consequence of this way of thinking is the treatment of all learning about culture as part of a single science, the task of which is to create a coherent picture of reality. The question thus arises as to how musicology – a discipline which aspires to explaining musical phenomena – will find itself in this fascinating new world? Will it follow the example of psychology and linguistics, or will it perhaps successfully repel the influence of the discoveries of the natural sciences?

The communicativeness of music is the area of research which perhaps most clearly allows us to become aware of the new situation in which musicology finds itself. An understanding of why music is a medium of communication and what is involved in the exchange of information via this medium is a key question for the further functioning of musicology if we want it to become part of that *one* science. The answer to these questions is at once the answer to the question of the link between musical communicativeness and the new situation of musicology as diagnosed here. Is a reductionist way of explaining cultural phenomena absolutely necessary to musicology?

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[12] Edward J. Gorzelańczyk, 'The Neurobiological, Biomedical, and Evolutionary Sources of Human Culture and Language', *Acta Neuropsychologica* 1/4 (2003), 436–448.

[13] See e.g. Clifford Geertz, *The Interpretation of Cultures: Selected Essays* (New York, 1973).

[14] Steven M. Platek, Julian P. Keenan and Todd K. Shackelford, *Evolutionary Cognitive Neuroscience* (Cambridge, 2007), 1.

Since the times of Charles R. Darwin, we have become increasingly aware, step by step, of the evolutionary origins of humankind, and we are beginning to realise the import of all the implications ensuing from that fact. The more we learn about the animal world on the basis of increasingly abundant research in the fields of ethology, genetics, evolutionary biology and neurobiology, the more we realise how fine is the line separating man from other species of mammal. Pioneering research into the behaviour and cognitive capacities of chimpanzees[15] has shown us that it is not only we humans who possess culture.[16] What is more, we know from these observations that the way of communicating by means of a natural language, treated as exclusive to humans, did not arise suddenly in isolation from what are seen as primitive animal codes of communication somewhere in the not-too-distant history of our genus, but took shape gradually through biological evolution, making use of successive stages in communication common to a broader group of animals.[17] These discoveries have opened a new phase in research into human behaviours and altered our views on the majority of human abilities which were hitherto considered qualitatively different to animal skills; they have begun to be perceived as merely quantitatively different. They included tool-handling skills,[18] the sense of fair trade[19] and the tendency for altruistic behaviours.[20] An increasing number of facts have also begun to confirm Steven Pinker's thesis[21] – quite bold in its day – of the existence of a 'language instinct', that is, an innate capacity in every healthy human for acquiring a natural language – a human attribute which had hitherto been regarded as an extraordinary cultural discovery of man.

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[15] Jane van Lawick-Goodall, *In the Shadow of Man* (London, 1971); Jane Goodall, *The Chimpanzees of Gombe: Patterns of Behavior* (Boston, 1986).

[16] Dan Sperber and Lawrence Hirschfeld, 'Culture, Cognition, and Evolution', in *The MIT Encyclopedia of the Cognitive Sciences*, ed. Robert A. Wilson and Frank C. Keil (Cambridge, Massachusetts and London, 1999), cxi–cxxxii, at cxv; Andrew Whiten and Christophe Boesch, 'Kultury szympansów' [The culture of chimpanzees], *Świat Nauki* 3 (2001), 44–51, at 45.

[17] John M. Smith and Eörs Szathmáry, *Tajemnice przełomów w ewolucji. Od narodzin życia do powstania mowy ludzkiej*, trans. Michał Madaliński (Warsaw, 2000), 193–200 [Eng. orig. *The Origins of Life. From the Birth of Life to the Origin of Language* (Oxford, 1999)].

[18] Carel van Schaik, 'Początki małpiej kultury' [The beginnings of monkey culture], *Świat Nauki* 5 (2006), 56–63.

[19] Frans B. W. de Waal, 'Handlujące zwierzęta' [Trading animals], *Świat Nauki* 5 (2005), 70–77.

[20] George C. Williams, 'Altruism', in *The MIT Encyclopedia of the Cognitive Sciences* (see above, n. 16), 12–13.

[21] Steven Pinker, *The Language Instinct* (London, 1994).

Today, many scholars[22] are inclined to treat music in a similar way – something which cannot pass unnoticed by musicology[23] – and the common evolutionary origins of music and natural language, pointed to increasingly often, steer us directly towards the titular problem of musical communicativeness.

But what exactly is communication, and is there some broad definition of this term that would allow us to reconcile all the notions currently in general use in the many different sciences? Communication is interaction involving the exchange of information between complex systems. According to Juan Roederer, such '[...] information-based interactions occur only between bodies or, rather, between systems the complexity of which exceeds a certain minimum degree. We say that a (complex) system A is in information-based interaction with a (complex) system B if the configuration of A, or, more precisely, the presence of a certain spatial or temporal feature or pattern in system A, causes a specific alteration in the structure or the dynamics of system B, with a final state that depends only on whether that particular pattern was present in A. Moreover, it is a condition that (a) both A and B be decoupled energy-wise (meaning that the energy needed to effect the changes in system B must come from sources other than energy reservoirs or flows in A or the physical mechanism linking A with B), and (b) no lasting changes occur as a result of this interaction in system A (which thus plays a catalytic role in the interaction process)'.[24] Understood in this way, communication is one of the universal phenomena of the animated world and has been present since the dawn of the evolutionary history of life on Earth.

Sound expression, too, as one of the manifestations of communication, appeared in phylogenetically earlier living organisms. The evolution of sound communication is particularly linked, however, to the development

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[22] e.g. Geoffrey Miller, 'Evolution of Human Music Through Sexual Selection', in *The Origins of Music*, ed. Nils L. Wallin, Björn Merker and Steven Brown (London, 2000), 329–360; Isabelle Perezt, 'The Biological Foundations of Music', in *Language, Brain, and Cognitive Development*, ed. Emmanuel Dupoux (London, 2001), 435–445; Matt Ridley, *O pochodzeniu cnoty*, trans. Małgorzata Koraszewska (Poznań, 2000), 213–214 [Eng. orig. *The Origins of Virtue: Human Instincts and the Evolution of Cooperation* (London, 1997)]; Juan G. Roederer, 'The Search for a Survival Value of Music', *Music Perception* 1/3 (1984), 350–356; Anthony Storr, *Music and the Mind* (New York, 1992), 3–23.

[23] It is worth pointing out that among those who advocated treating music as a phenomenon specific to *Homo sapiens* was the musicologist John Blacking, who wrote: 'There is so much music in the world that it is reasonable to suppose that music, like language and possibly religion, is a species-specific trait of man.' John Blacking, *How Musical is Man?* (Seattle, 1973; cit. from 6th printing, 2000), 7.

[24] Juan Roederer, 'On the Concept of Information and Its Role in Nature', *Entropy* 5/1 (2003), 3–33, at 10.

of the nervous system, and in particular the evolution of the brain. As the brain evolved, evolutionarily younger structures were built onto the existing, evolutionarily older, structures;[25] as a result, many functions of adaptational significance that were present in lower animals in the evolutionary line of *Homo sapiens* were also preserved in contemporary people.[26] So we ought not to be surprised that all human vocal expression (for example crying, laughter, speech or song) serves communication. One of the important implications of this knowledge is the conviction that man's vocal communication must contain some elements of the vocal communication of our animal ancestors. Contemporary knowledge on the subject of the specificity of the evolution of the nervous system also shows that those structures of the brain which emerged in evolution relatively recently (for example the prefrontal cortex) control the evolutionarily older structures linked to the processing in succession of motor, emotional and cognitive acts. This suggests that man's musical activity contains motor, emotional and cognitive elements which, to a varying degree, are universal to particular biological taxa (such as the class, order, genus or species) and play an important role in the process of communication through music. And indeed, certain features of some particular forms of human vocal expression, such as 'pet-directed speech', allowing us to communicate with other species,[27] can be observed in musical expression.[28]

The order in which the human cognitive system processes information also reflects the stages in the evolutionary development of that system, which also suggests that elements of older forms of sound communication must be present in the processing of musical phenomena. This hierarchic construction means that certain ways of reacting to sound stimuli that were characteristic of our evolutionary ancestors might be at most inhibited by the younger structures of the brain, but never eliminated or completely replaced. Since some acoustic phenomena linked to specific situations in the environment have remained unchanged for millions of years, natural selection has preferred the emergence and preservation of certain effective (that is, possessing adaptational significance)

[25] On structural conservation in vertebrate brains see also Georg F. Striedter, *Principles of Brain Evolution* (Sunderland, 2005), 65–70.

[26] J. Roederer, 'On the Concept', 23.

[27] Steven Mithen, *The Singing Neanderthals. The Origin of Music, Language, Mind, and Body* (Cambridge, 2006), 74–75.

[28] Doris Stockmann and Günter Tembrock, 'Interdisciplinäre Probleme zwischen Musikwissenschaft und Bioakustik', *Beiträge zur Musikwissenschaft* 25/3–4 (1983), 171–195.

reactions in response to these phenomena. Information of this sort is legible, although it often does not need to be consciously registered, even in man. For example, a short, sudden, loud and low sound triggers a reaction of surprise, which is hard to control even in a situation with positive emotional connotations.

The communicational character of music is not confined, however, to those elements, obvious to common sense, that are unquestionably present in musical expression. Many musical sonic phenomena that occur in speech and in music (for example, prosodic contour and rhythmic grouping in speech are homologues of melodic contour and rhythmic phrasing in music)[29] possess the property of communicating emotions. This property is a consequence of the probable existence of some form of prelinguistic vocal communication among our ancestors,[30] part of which were the above-mentioned sonic phenomena. Similar elements of so-called 'expressive dynamics',[31] such as crescendos and accelerandos, would appear to constitute emotional messages that are comprehensible, not only to all people, but also to some animals. Of course, the communicativeness of music is not linked solely to these evolutionarily older ways of employing sounds for communication in the animal kingdom. The aforementioned adaptational character of music understood as a kind of peculiarly human activity is also connected with communication. And it is this question of the causes behind the natural selection of the musical abilities of *Homo sapiens* that touches on the most crucial problems concerning the communicational function of music.

So what is the object of the musical message? By means of sounds, man transmits a range of information, from spatial location, physical build or sexual attractiveness through information relating to an individual's emotional state or the cohesion of a group to referential content. Some information of this kind ought to be present in all sound messages, whilst some will be linked solely to exclusively human ways of expression through sound. These undoubtedly include, alongside speech, music. Yet

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[29] Aniruddh D. Patel, *Music, Language, and the Brain* (Oxford and New York, 2008): the grouping of events into phrases, 173–174; melodic contour, 194–196.

[30] Bryan G. Levman, 'The Genesis of Music and Language', *Ethnomusicology* 36/2 (1992), 147–170; Steven Brown, 'The "Musilanguage" Model of Music Evolution', in *The Origins of Music* (see above, n. 22), 271–300; Edward J. Gorzelańczyk, 'Genetyczne źródła języka' [The genetic origins of language], *Scripta Neophilologica Posnaniensia* 5 (2003), 49–54; Steven Mithen, *The Singing Neanderthals* (see above, n. 27).

[31] Björn Merker, 'Is There a Biology of Music, and Why Does it Matter?', in *Proceedings of the 5th Triennial ESCOM Conference,* ed. Reinhard Kopiez, Andreas C. Lehmann, Irving Wolther and Christian Wolf (Hanover, 2003), 402–405, at 405.

while we agree that the main function of the former is to transmit referential content, the dispute over the basic communicational function of music has a long tradition and would seem to be unresolved. From the point of view of the Western musical tradition, we usually wish to treat music exclusively as a sort of work of art – of art which involves the juxtaposing (composing) of tones, in a way that is arbitrarily accepted by a given social group, in order to obtain an artistic and aesthetic effect. However, observing music-making humans in various situations – not only within our cultural sphere – we are obliged to admit that the communicating of artistic or aesthetic content through music does not always, if at all, appear to constitute its basic function.

This picture of musicality also affects, paradoxically, the way in which music is understood by natural scientists and inclines many of them to regard music as a sign of cultural inventiveness. For example, the well-known evolutionist Pinker, already referred to above, has deemed music a 'pure pleasure technology'.[32] For Pinker, music is not adaptational in the biological sense, but rather constitutes a peculiar epiphenomenon of biological evolution. In his opinion, the mind employs other adaptational skills to create non-adaptational music. This intriguing hypothesis, readily accepted by musicologists fascinated by the uniqueness and originality of the styles of European composers of musical works, has met with increasing disapproval. The doubts over its veracity are the result of many interesting observations and discoveries made in recent years by which Pinker's views are not borne out. These include observations of persons affected by so-called 'congenital amusia',[33] which suggest the hereditary nature[34] of certain specifically musical aptitudes, such as a sense of tonality or the recognising of musical intervals. Another phenomenon that is difficult to explain through Pinker's vision of man's musicality is the capacity for sound and motion synchronisation,[35] characteristic exclusively[36] of mankind[37] and employed in musical activity,

[32] Steven Pinker, *How the Mind Works* (London, 1998), 528.

[33] Julie Ayotte, Isabelle Peretz and Krista Hyde, 'Congenital Amusia. A Group Study of Adults Afflicted with a Music-Specific Disorder', *Brain* 125 (2002), 238–251.

[34] Isabelle Peretz, Stéphanie Cummings and Marie-Pierre Dubé, 'The Genetics of Congenital Amusia (Tone Deafness): A Family-Aggregation Study', *The American Journal of Human Genetics* 81 (2007), 582–588.

[35] Edward W. Large, 'On Synchronizing Movements to Music', *Human Movement Science* 19 (2000), 527–566.

[36] Although among our nearest relatives – chimpanzees – the ability to keep up a rhythm has not been observed, even after training (Björn Merker, 'Synchronous Chorusing and Human Origins', in *The Origins of Music* (see above, n. 22), 315–327, at 319), there are some anecdotal accounts of parrots moving rhythmically to music (Aniruddh D. Patel, *Music, Language, and the Brain* (see above, n. 29), 411).

and its strong link to emotions, often leading to so-called 'musical rhythmic entrainment' – a phenomenon in which, in people dancing, singing or listening to music together, gestures, muscle action, brainwaves and breathing become synchronised, and their joint activity often leads to the experiencing of altered states of awareness and to revitalisation and a feeling of well-being.[38]

A separate issue, meanwhile, is the question of the adaptational function of music and its possible communicational character. Among the various explanations of this question, two hypotheses are particularly favoured today. The first of these dates back to the nineteenth century and is owed to Darwin. Although Darwin wrote about man's musical abilities that '[...] they must be ranked amongst the most mysterious with which he is endowed',[39] he was already seeking an explanation for human musicality in the action of sexual selection. The pressure of selection, which, in the opinion of Darwin and his followers, led to the emergence of musical aptitudes in man, is linked to the key role of music in the evaluation and selection of sexual partners.[40] In this case, music would be a message about the attractiveness of its performer. The second hypothesis is linked to man's evolution as a social animal and concerns the benefits accruing through musical skills to individuals living in a group in the establishing and consolidation of the group[41] and in providing information about its cohesion.[42] Also not without significance is music's important role in strengthening parental bonds and in a mother's pre-linguistic communication with her children,[43] although this hypothesis does not account for the universality of collective vocal activity among adults.

In all these cases, both listening to music and its expression are accompanied by emotional reactions. Of course, it is not only the natural scientists who have pointed to the emotionality of music. The first to do so were unquestionably the humanists. Philosophers, composers and musicologists have repeatedly stressed the powerful link between music and

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[37] Aniruddh D. Patel, *Music Language, and the Brain*, 409.

[38] Judith Becker, *Deep Listeners: Music, Emotion, and Trancing* (Bloomington, 2004), 127–129.

[39] Charles R. Darwin, *The Descent of Man, and Selection in Relation to Sex* (London, 1871), vol. 2, 333.

[40] Ibid.; also Geoffrey Miller, 'Evolution of Human Music Through Sexual Selection' (see above, n. 22).

[41] Matt Ridley, *O pochodzeniu cnoty* (see above, n. 22), 213–214; Juan G. Roederer, 'The Search for a Survival Value of Music' (see above n. 22), 350–356; Anthony Storr, *Music and the Mind* (see above n. 22), 3–23.

[42] Edward H. Hagen and Gregory A. Bryant, 'Music and Dance as a Coalition Signaling System', *Human Nature* 14/1 (2003), 21–51.

[43] Ellen Dissanayake, 'Antecedents of the Temporal Arts in Early Mother – Infant Interaction', in *The Origins of Music* (see above, n. 22), 389–410.

emotions. Music acts more powerfully and in a more direct way on the subcortical emotional systems than any of the visual arts,[44] and music's links with emotions also appear to be exceptional compared with other forms of sound expression practised by man. Although one of the dominant views on these links was the claim that music merely expresses or represents emotions,[45] there is increasing evidence to suggest that musical activity is also a way of directly communicating emotions.[46] What is more, music triggers emotions on many levels of man's emotional system.[47] In addition, the autonomous nervous system's involvement in the processing of musical stimuli causes the temporal organisation of a piece of music to be coordinated with the frequency of breathing and the rhythm of heartbeats – physiological phenomena which, alongside emotions and expression, are part of emotional reaction[48] and influence the way in which emotion is encoded in music. But is the expression of emotion in music the essence of the musical message? Given that emotions are the basic mechanism of evaluation and motivation, it may be assumed that they will always accompany us whenever the information that reaches our nervous system is of crucial importance to us in terms of survival. In other words, it is by means of emotions that the first recognition of the character of information is effected. Emotions also enable us to recognise a great deal of the more detailed information contained in a musical message.

If music is meant to transmit information about sexual attractiveness, then the specific features of performance attesting the performer's skill should evoke a corresponding emotional reaction in the receiver. When the intended function of music is the consolidation of a group, positive emotions ought to be aroused by successful ensemble performance – satisfaction from rhythmic synchronisation or the maintaining of tonal

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[44] Jaak Panksepp and Günther Bernatzky, 'Emotional Sounds and the Brain: the Neuro-affective Foundations of Musical Appreciation', *Behavioral Processes* 60 (2002), 133–155, at 137.

[45] See e.g. Leonard B. Meyer, *Emotion and Meaning in Music* (Chicago, 1956); Susanne K. Langer, *Nowy sens filozofii. Rozważania o symbolach myśli, obrzędu i sztuki*, trans. Alina H. Bogucka (Warsaw, 1976), 324 [Eng. orig. *Philosophy in a New Key. A Study in the Symbolism of Reason, Rite, and Art* (Cambridge, 1957)].

[46] Carol L. Krumhansl, 'An Exploratory Study of Musical Emotions and Psychophysiology', *Canadian Journal of Experimental Psychology* 51/4 (1997), 336–353.

[47] Jaak Panksepp and Günther Bernatzky, 'Emotional Sounds and the Brain', 137–138.

[48] Tom Johnstone and Klaus R. Scherer, 'Vocal Communication of Emotion', in *Handbook of Emotions*, 2nd edn, ed. Michael Lewis and Jeanette M. Haviland-Jones (New York, 2000), 220–235.

relations. Listening to well-synchronised, sonorous music performed by a group of which one is not a member, meanwhile, informing one of its cohesion, ought to engender fear and respect. This function is present, for example, in so-called 'war songs' not only encountered in many tribes, but employed to the present-day in many professional military units. The specific, repeated emotional reactions observed in infants to musical cues,[49] particularly easily observable in relation to lullabies,[50] also prove the naturalness of the informational properties of music.

Thus the observations presented above show that a most crucial role in arousing emotions by means of music is played by elements of evolutionarily older sound communication, which are also present in speech and in other spontaneous forms of communication through vocal 'gesture'. The importance and the long evolutionary history of the communicating of emotions by means of sounds indicate that the way in which emotions are expressed in music ought to take on a hierarchic order. The most basic elements in this order, and the most effective in evoking emotional reactions, should be evolutionarily older elements, and the most subtle those which have become learned during the process of socialisation and constitute conventional elements. And indeed, as psychologists' observations indicate, primitive affective vocalisations are regarded as more reliable information and are felt more truly than conventional and ritualised information.[51] What is more, some elements of the musical message, known as the 'acoustic cues' of a piece of music (e.g. tempo, dynamics), play a key role in the recognition of the emotional content of music when its conventional rules are alien to us,[52] and, as is suggested

[49] Laurel J. Trainor, 'Infant Preferences for Infant-Directed Versus Noninfant-Directed Playsongs and Lullabies', *Infant Behavior and Development* 19/1 (1996), 83–92; Laurel J. Trainor, Elissa D. Clark, Anita Huntley and Beth A. Adams, 'The Acoustic Basis of Preferences for Infant-Directed Singing', *Infant Behavior and Development* 20/3 (1997), 383–396; Adrienne M. L. Rock, Laurel J. Trainor and Tami L. Addison, 'Distinctive Messages in Infant Directed Lullabies and Play Songs', *Developmental Psychology* 35/2 (1999), 527–534.

[50] Johannes Kneutgen, 'Eine Musikform und ihre biologische Funktion. Über die Wirkungsweise der Wiegenlieder', *Zeitschrift für experimentelle und angewandte Psychologie* 17/2 (1970), 245–265; Anna M. Unyk, Sandra E. Trehub, Laurel J. Trainor and E. Glenn Schellenberg, 'Lullabies and Simplicity: A Cross-Cultural Perspective', *Psychology of Music* 20/1 (1992), 15–28.

[51] Klaus R. Scherer, 'Affect Bursts', in *Emotions: Essays on Emotion Theory*, ed. Stephanie H. M. Van Goozen, Nanne E. Van De Poll and Joseph A. Sergeant, (Hillsdale, 1994), 161–193.

[52] Laura-Lee Balkwill and William F. Thompson, 'A Cross-Cultural Investigation of the Perception of Emotion in Music: Psychophysical and Cultural Cues', *Music Perception* 17/1 (1999), 43–64; Laura-Lee Balkwill, William F. Thompson and Rie Mat-

by the results of some studies,[53] there exist certain culturally non-specific similarities in the emotional assessment of music on the basis of the above-mentioned cues.

Of course, the communicational character of music is not confined solely to the deeply-rooted means of communication outlined here; it allows music to be engaged as a conduit of content that is the effect of the action of the general human ability to impart meaning to various phenomena. Among procedures of this sort are such means of musical language as musical symbolism, musical quotation and leitmotif, to the understanding of which conscious education is essential. Yet this sort of semanticisation is not specific to music alone, but is a property present in every form of art, and also in many other domains of human activity, including the ways we dress and artificial languages, such as the Morse code or computer programming languages. The communicativeness of music, as of human speech, possesses first and foremost a natural character, resulting from the existence of a 'human musical instinct', and it is recognisable in a spontaneous manner by all healthy people. The evolutionary affinity of music with natural language also goes some way to explaining the often experienced impression of narrative while listening to a piece of music, and recent research illustrating cerebral activity while listening to music suggests that the processing of musical stimuli activates to a certain extent those areas of the cortex linked to the analysis of linguistic semantics.[54] This all goes to show that music is a medium of communication, not by accident or cultural caprice, but thanks to the action of evolutionary selection. Taking into account the longer evolutionary history of emotional communication in comparison with the relatively young capacity for the aesthetic assessment of phenomena and music's particular affinity with speech, the communicational function is one of the most primitive of musical properties. This bids us treat music above all as a communicational phenomenon, the role of which involves transmitting complex human experiences through means which serve the

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sunaga, 'Recognition of Emotion in Japanese, Western, and Hindustani Music by Japanese Listeners', *Japanese Psychological Research* 46/4 (2004), 337–349.

[53] Laura-Lee Balkwill, Lola L. Cuddy and William F. Thompson, 'Acoustic Cues in Emotive Music and Speech Across Cultures', in *Proceedings of the 8th International Conference on Music Perception & Cognition*, ed. Scott David Lipscomb, Richard Ashley, Robert O. Gjerdingen and Peter Webster (Evanston, 2004), 82.

[54] Stefan Koelsch, Elisabeth Kasper, Daniela Sammler, Katrin Schulze, Thomas Gunter and Angela D. Friederici, 'Music, Language and Meaning: Brain Signatures of Semantic Processing', *Nature Neuroscience* 7/3 (2004), 302–307; Stefan Koelsch, 'Neural Substrates of Processing Syntax and Semantics in Music', *Current Opinion in Neurobiology* 15/2 (2005), 1–6.

emotional intensification and aesthetic reaction of the receiver.[55] From this perspective, music may, and usually does, constitute material for musical creation, just as natural language serves as material for poetry or literature.

Maciej Jabłoński

But how do things look when we approach them from the angle of 'my' humanistics? If we resolutely resist the temptation of adopting the thesis of the autonomy of art and music, if we acknowledge that music is a message and that the instance that determines this fact is culture, then we will note that within musicological reflection there appear a variety of stances grouped around three central notions: sign, discourse and expression.

On the one hand, therefore, we speak of the intentional communication by a composer of such and such a state of affairs, usually of a non-musical, but occasionally of a musical, nature. Here, the communicational intention is the source of meaning-generative compositional activity within a more or less openly confessed aesthetic doctrine and by means of specific artistic conventions. The effectiveness of the communication and the legibility of the message, meanwhile, is conditioned by a knowledge and acceptance of the rules of the doctrine and the convention, thanks to which, in the process of interpretation, the meaning of the sign-message is produced and enhanced.

On the other hand, we also speak of unintentional communication, since *every* musical work communicates 'something' about the context, situation, time or circumstances which gave rise to it, which surround it or to which it *always* 'somehow' refers. As Etienne Souriau writes: 'It is true that the music of some composer or school or era contains signs enabling us to define the cultural state or the technical environment in which that music flourishes and its social organisation'.[56] According to this view, it is impossible to ignore history and context, and indeed counterproductive for our understanding of a work.

The problem of the 'work/meaning' relationship is one of the weightier problems with which musicology wrestles today; whilst there is not the space here to discuss it at length, it is worth noting in passing. 'New musicology' maintains, not only that musical meaning (i.e. the effect of the

[55] Edward O. Wilson, *Consilience* (see above, n. 5), 238.

[56] Michał Piotrowski, 'Znak – symbol – oznaka. O heteronomicznych kategoriach semiotyki muzycznej' [Sign, symbol, mark. On the heteronomic categories of music semiotics], *Muzyka* 30/1 (1985), 39.

active 'life' of a cultural sign that is subject to continual interpretation) occupies a central place in musicological inquiry, but also that 'meaning' is an immanent part of a work, which is no longer and will not be autonomous; the 'pure' structural analysis of a work is worthless, as it makes it impossible to recognise the communicational dimension of music.

We also speak of the musical work as a discourse, which is at once both message and act; we place the emphasis on music as goal-directed process. In literary studies, this situation is described by the theory of speech acts, in accordance with which every linguistic utterance may be described in terms of stimulus and reaction, intended and performed act on the part of the emitter, and aroused reaction and attitude on the part of the receiver. Some theories formulated within the sphere of musicology fall within this interpretation, such as Tarasti's theory of actoriality, based on the premise that the musical discourse is a quasi-subject, endowed with the 'ability' to communicate, which is governed by modal principles ('want', 'have to', 'know', 'be able to').[57] It is in this way, as an intuitive grasping of the 'essence' of music, interpreted through the prism of a thesis about the subjective character of the musical discourse, that we understand Witold Lutosławski's statement that the music of Béla Bartók 'speaks [in the sense of communicates] to us of lofty matters. [...] This music will transport us above place and time – to the regions of those matters and feelings which have always linked, and always will link, all people.'[58]

Finally, we come to the situation in which the musical work communicates 'something' to us in a particular way, i.e. expresses. The polyvalence of this notion wreaks havoc in musicological thought, but generally speaking we distinguish three approaches. Advocates of the first approach recognise in expression *the expression of some states of affairs*, above all mental states (emotions, moods, feelings). Advocates of the second approach see expression as a *process of evoking* (arousing, stimulating, generating) mental states in the receiver. Finally, representatives of the third approach treat expression as *a state of affairs* involving the ascribing to a given object of mental traits, by means of anthropomorphisation, of 'empathising', or else as a result of properties objectively found in the object. Thus we say, for example, that Beethoven's sonata is 'pathétique' because a) it is a sign of 'exaltedness', b) it is 'exalted', because it evokes specific reactions, or c) it is itself 'exalted', just as a person can be 'exalted'.

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[57] Eero Tarasti, *A Theory of Musical Semiotics* (Bloomington, 1994), 98–105. See also Maciej Jabłoński, *Muzyka jako znak. Wokół semiotyki muzyki Eero Tarastiego* [Music as sign. On Eero Tarasti's semiotics of music] (Poznań, 1999), 117–128.

[58] Zbigniew Skowron, 'Klasycy muzyki europejskiej XX wieku w świadomości twórczej Witolda Lutosławskiego' [The Classics of twentieth-century European music in the creative awareness of Witold Lutosławski], *Res Facta Nova* 9/18 (2007), 73.

Music expresses – in the sense of communicates – a broad palette of states of affairs: subjective, objective and subjective-objective. They can take on the most general profile in the subjective range when we say that 'music expresses the essence of man' (Gille) or, as George Steiner, that 'I believe the matter of music to be central to that of the meanings of man',[59] or else when we define the art of music as the most perfect kind of expression of universal emotions. Such a general characterisation in the objective variant, meanwhile, is gained by the view of Tibor Kneif, convinced that 'music in every case expresses that which is social'.[60] On a much lower level of generality, we note the same kind of dependency, yet we speak of an individual emitter-composer or receiver. By way of example, we may cite the opinion of Julius Portnoy that the musical work is a 'medium of expression through which the composer conveys his feelings to others'.[61] Out of the conviction that the work of art is an act of communication on the part of an individual artist there arises, as we know, the Romantic theory of 'mysterious genius', which Harold Bloom recalls so ardently today. However, the call for a full acknowledgement of the individuality of an artist or composer, with all that this entails, for an acknowledgement – as Wolfgang Goethe declares – of the strict creative fantasy of artists, refers us back, by necessity, to the realm of that which is unknowable. This is a thesis that the scientists would certainly wish to reject.

There are many reasons for which 'traditional' humanists confess the doctrine of *omnis cultura ex cultura*; there also certainly exist reasons for which representatives of the natural sciences cannot accept this thesis, as they deny its empirical evidence. What is particularly important to us here is the ability and opportunity to take up the discussion, and perhaps even to adopt the desideratum of consilience on jointly-defined terms. Or perhaps this problem is ill-conceived, and discussion on the subject of whether musicology is a science or how it might become one is simply out of place?

Translated by John Comber

[59] George Steiner, *Real Presences* (Chicago, 1989), 6.

[60] Michał Piotrowski, 'Pojęcie wyrażania we współczesnej estetyce muzyki' [The notion of expressing in contemporary music aesthetics], in *Z filozoficznych problemów muzyki* [Philosophical problems of music], ed. Michał Piotrowski (Poznań, 1989), 46. Kneif's original utterance reads: 'Musik ist ein Ausdruck der Gesellschaft'. See also Tibor Kneif, 'Musiksoziologie', in *Einführung in die systematische Musikwissenschaft*, ed. Carl Dahlhaus (Cologne, 1971), 184.

[61] Julius Portnoy, *The Philosopher and Music: A Historical Outline* (New York, 1954).