

MARK REYBROUCK

Section of Musicology, Faculty of Arts, KU Leuven – University of Leuven

Musical sense-making between experience and conceptualisation: the legacy of Peirce, Dewey and James

ABSTRACT: This contribution revolves around the concept of musical sense-making. Starting from the seminal works of Peirce, Dewey and James, it focusses on the musical experience, which can be defined from an empiricist position as a process that calls forth epistemic interactions with the sounds. Central in this approach is the tension between the richness and fullness of the musical experience and the cognitive economy of symbolic abstraction. Dewey, in particular, has stressed the role of having an experience proper as a kind of heightened vitality. James, on the contrary, has dealt with the distinction between percept and concept, stressing the role of knowledge-by-acquaintance as the kind of knowledge we have of something by its presentation to the senses. In what he coined as radical empiricism he states that the significance of concepts always consists in their relation to perceptual particulars, which, in turn, are embedded in a conceptual map. This map can be described in semiotic terms, which holds a symbolic approach to cognition to the extent that it is concerned with signs rather than with sensory realia. The question should be raised, however, as to the nature of these signs. There is, in fact, a critical distinction between internal and external semantics with signs referring primarily to themselves or to something external to the music. In an attempt to bring these claims together, it is argued that musical signs should provide a self-referential semantics for which the abstract is really material, a real semiotics of singular potential which is grounded in the real and natural experience. Relying on some grounding work of Peirce and Morris and the relation between signs and tool using, a theoretical framework is introduced that has at least some operational power in going beyond a merely acoustic description of the music as it sounds.

KEYWORDS: musical sign, sense-making, experience, cognitive semantics, radical empiricism, continuous-discrete, percept-concept

Introduction

Is music something out there? A kind of artefact which is objectified, and that can be dealt with in a static way? Or does it rely on processes which call forth epistemic interactions with the sounds? Should we conceive of music users besides the music, and think about music as something which is perceived, conceptualised and enacted upon in order to be meaningful? This paper tries to answer these questions by introducing a theoretical framework that leans on the

seminal writings of Peirce, Dewey and James. Its central focus is on the role of musical experience and the way we make sense of sounding music.

Listening is not merely reducible to the richness of sounding stimuli but can be considered as a process of knowledge acquisition which is helpful in the semiotisation of the sonic world. It has a role in the construction of knowledge with meaning being characterised in terms of the “experience” of the human beings who are doing the cognising. Our cognition, in fact, is not reducible to “naive realism” but has the mark of our cognising with our minds. Knowledge, thus defined, is the result of an ongoing interpretation that emerges from our capacities of understanding — this is “cognitive realism” —, that are rooted in the structures of our biological embodiment but are lived and experienced within a domain of consensual action and cultural history.¹ This is a basic claim of “cognitive semantics” that accounts for what meaning is to human beings, rather than trying to replace humanly meaningful thought by reference to a metaphysical account of a reality external to human experience.² The same holds true for “conceptual” or “mentalistic” semantics which state their priority over “real semantics” in stating that one cannot take for granted the “real world” as the domain of entities to which language refers. Rather, the information that speakers can convey must be about their construal of the external world, where one’s construal is the result of an interaction between external input and the means available to internally represent it.³

Music, in this sense, is a collection of sound/time phenomena which have the potential of being structured, with the process of structuring being as important as the structure of the music. As such, it is possible to go beyond a merely “structural description” of the music in favour of a “process-like description” of the ongoing process of maintaining epistemic contact with the music as it sounds.

Music and musicological research

Music as experience is not yet established as a major topic of research. There are prevailing paradigms which run through musicology such as historical research, music analysis and performance studies. New paradigms, however, are evolving which challenge some weaknesses and shortcomings of traditional approaches: (i) the subject matter of much music research is too narrow in focussing primarily on the western canon of art music (the common-practice tradition), (ii) music research deals basically with second order stimuli, relying on symbolic tran-

¹ Francisco J. Varela, Evan Thompson, Eleanor Rosch, *The Embodied Mind. Cognitive science and Human Experience* (Cambridge, Massachusetts – London: MIT Press, 1991), 150.

² George Lakoff, *Women, Fire, and Dangerous Things: What Categories Reveal About the Mind* (Chicago: University of Chicago Press, 1987), 120.

³ Ray Jackendoff, *Consciousness and the Computational Mind* (Cambridge, Massachusetts – London: MIT, 1987), 83.

scriptions rather than on the music as it sounds, (iii) there is a lack of operational terminology for describing the music as a temporal art and the process of dealing with the music; and (iv) there is need of techniques for visualising and recording the music and the reactions to the sounding music in a way that does justice to the scientific claims of exactness, completeness and repeatability.

Many of these claims are current topics of research with emerging research communities that focus on a kind of common paradigm which is articulated by four major claims: (i) music as a sounding art; (ii) the process of dealing with music; (iii) the role of the musical experience and (iv) the process of sense-making while dealing with music.

The first claim is an ontological one: it states that music is only real music when it sounds. This is an empiricist position, which stresses the firsthand information in perception rather than relying on second-order stimuli. It means that we should conceive of “music-as-listened-to” and “music-as-perceived”, rather than thinking and conceptualising of music at a merely symbolic level without any actual connection to the music as it sounds. The claim is important as it challenges symbolic approaches, which deal with music merely at a mental level. The act of composing is a paradigm case, but even sight-reading and score analysis deal with notes — as symbolic reference to sounding things — rather than with music as it sounds.

The second claim concerns the role of “interaction” with the sounds, either at the actual level of real sounding music or at the virtual level of imagery and representation. Real-time interaction, e.g., keeps step with the actual unfolding through time. It is obvious in many musical applications such as the traditional pedagogy of instrumental teaching — where the apprentice tries to imitate the teacher’s instrumental playing — , the act of playing music from a score and the act of improvising. Most of these interactions combine motor output and sensory processing with the aim to deviate as little as possible from the standard of performance. In all these cases, the mind is functioning as a central processing mechanism that co-ordinates the sensory input with the motor output (input-output mappings). It is possible, however, to go beyond this real-time processing and to perform mental operations which transcend the inexorable character of the unfolding of time. As such, the mind operates at a level of virtual simultaneity, which is working “outside of time” through mechanisms of anticipation and memory. This is the level of “mental computations” and “symbolic play”.⁴

The role of musical experience, thirdly, has received rather limited attention in existing musicological research. There are psychological studies and music reception and cognition studies, but musicology as a discipline is still waiting for a comprehensive and theoretically grounded framework that explains the idiosyncrasies and com-

⁴ Mark Reybrouck, “Musical Creativity between Symbolic Modelling and Perceptual Constraints: the Role of Adaptive Behaviour and Epistemic Autonomy”, in *Musical Creativity: Multidisciplinary Research in Theory and Practice*, ed. Irène Deliège and Geraint Wiggins (Oxford: Psychology Press, 2006), 42–59.

monalities of listening behaviour. Yet, there is a considerable body of older theoretical writings that have dealt extensively with the topic of having an experience.⁵ Central in these writings is the tension between “percept” and “concept” and between the particularities of the sensory experience and the conceptual labels that are applied to them.

The process of “sense-making”, finally, implies a shift from *ontological* (what is music?) to “epistemological questions” (what is music cognition and how can it be acquired?) with as major claim the “construction” of meaning out of the perceptual flux.⁶ It involves a semiotisation of the sonic world, which means that we must conceive of the music user not as a merely passive recipient but as an organism that tries to build up semiotic linkages with the world. In building up these linkages, the organism can rely on innate and acquired mechanisms of information “pickup” and information “processing”. As such, there is a tension between *wired-in reactivity* to the (sonic) environment – with reactions that behave like lock-and-key – and “mediate reactions” which are the outcome of learning processes and cognitive mediation.

Dealing with music: processual and experiential claims

The *processual* approach to dealing with music is somewhat related to the early claims of cognitive musicology which stated that music is above all a human experience, not merely a set of artefacts or “structures”. This processual approach can hardly be overstated: music, as a temporal art, is characterised by “consumption” of time. In distinction to, e.g., a geometric figure, which is presented at a glance, music relies on the successive presentation of component parts. The listener, therefore, should bring together the particularities and idiosyncrasies of the sonorous unfolding and the more overarching principles of relational continuity. As such, there is a basic tension between the “discreteness” and “successivity” of small temporal windows and the more global “synoptic overview.” The latter allows the music user to grasp the music in a simultaneous act of consciousness or comprehension⁷ but at the cost of the richness of the full perceptual experience.

⁵ John Dewey, *Experience and Nature* (Chicago-London: Open Court Publishing Company, 1925); John Dewey, *Art as Experience* (New York: Capricorn Books, 1958 [1934]); William James, *Essays in Radical Empiricism* (Cambridge, Massachusetts – London: Harvard University Press 1976 [1912]).

⁶ Mark Reybrouck, “Biological roots of musical epistemology: Functional Cycles, Umwelt, and enactive listening”, *Semiotica* 134 (2001), no 1–4: 599–663; Mark Reybrouck, “A Biosemiotic and Ecological Approach to Music Cognition: Event Perception between Auditory Listening and Cognitive Economy”, *Axiomathes. An International Journal in Ontology and Cognitive Systems* 15 (2005), no 2: 229–66.

⁷ Rolf Inge Godøy, *Formalization and Epistemology* (Oslo: Scandinavian University Press, 1997).

This tension between the “richness of experience” and “economy of processing”, however, is not typical of music, but is a major topic in the pragmatic philosophy of Dewey and James. Dewey, in particular, has elaborated on the concept of “having an experience”:

Experience in the degree in which it is experience is heightened vitality. Instead of signifying being shut up within one’s private feelings and sensations, it signifies active and alert commerce with the world; at its height it signifies complete interpenetration of self and the world of objects and events.⁸

This heightened vitality has adaptive value as well: it is exemplified in the life of the savage man who is in danger in a threatening environment. Observation, then, is both “action in preparation” and “foresight for the future” with the senses functioning as sentinels of immediate thought and outposts of action.

Having an experience, further, is not unidirectional with the senses as the only interface. Experience has pattern and structure because it is “doing and undergoing” in relationship. It is exemplified most typically in the artistic experience:

...art, in its form, unites the very same relation of doing and undergoing, outgoing and incoming energy, that makes an experience to be an experience. — Man whittles, carves, sings, dances, gestures, molds, draws and paints. The doing or making is artistic when the perceived result is of such a nature that its qualities as perceived have controlled the question of production. [...] The artist embodies in himself the attitude of the perceiver while he works.⁹

The perceptual experience in general is characterised by full and rich experience. It refers to the individual thing existing here and now with all the unrepeatable particularities that accompany and mark such existences.¹⁰ Most objects of our ordinary perception, however, lack this completeness, being short-circuited as soon as there is an act of recognition. The full perceptual realisation of just the individual thing we perceive is then replaced by the identification of something that acts as an index of a specific and limited kind of conduct. Aesthetic perception, on the other hand, is a real perceptual experience. It is characterised by the richness of full perception. A musical experience, in this view, is not basically different from an auditory experience at large. It is continuous with the “natural experience” or “experience proper” with a difference in degree rather than in quality.

A somewhat related approach to the fullness of experience was advocated by James¹¹ in his doctrine of “radical empiricism” that deals with the tension between “concept” and “percept”. It stresses the role of “knowledge-by-acquaintance” — as the kind of knowledge we have of a thing by its presentation to the senses — and

⁸ Dewey, *Art as Experience*, 19.

⁹ *Ibid.*, 48.

¹⁰ *Ibid.*, 177.

¹¹ James, *Essays*.

states that the significance of concepts consists always in their relation to perceptual particulars. What matters is the fullness of reality, which we become aware of only in the perceptual flux. Conceptual knowledge is needed only in order to manage information in a more “economical” way. As such, it is related to principles of “cognitive economy:”

We extend our view when we insert our percepts into our conceptual map. We learn about them, and of some of them we transfigure the value; but the map remains superficial through the abstractness, and false through the discreteness of its elements; and the whole operation, so far from making things appear more rational, becomes the source of quite gratuitous unintelligibilities. Conceptual knowledge is forever inadequate to the fullness of the reality to be known. Reality consists of existential particulars as well as of essences and universals and class-names, and of existential particulars we become aware only in the perceptual flux. The flux can never be superseded.¹²

From experience to sense-making: a real semiotics of singular potential

James’ insights are of great value. In stating that knowledge should ultimately be debatable in terms drawn from experience, he provides a very promising conceptual framework for the description of music as a sounding art. As such, it is possible to go beyond a merely conceptual approach to cognition in stressing the role of knowledge-by-acquaintance and bringing together the claims of having an experience and its embedding in a conceptual map.

This conceptual map, further, can be described in “semiotic terms.” Semiotics, in fact, holds a symbolic approach to cognition. Being concerned with sense-making and principles of cognitive economy, it relies on “signs” rather than on sensory *realia*. The question should be raised, however, as to the nature of these signs: do they refer to mental representations of the sounds — as in a musical score — , or to something external to the music? Should we conceive of “internal” or “external semantics”, or is it possible to bring both approaches together in a framework that goes beyond this dichotomy? There are three approaches that address this question: (i) the discrete/continuous dichotomy, (ii) the percept/concept dichotomy and (iii) the internal/external dichotomy.

The “discrete/continuous dichotomy” is related to the distinction between categorical vs. acoustical perception. “Categorical perception” involves an act of recognition and assigns one discrete meaning to an event that is evolving over time. “Acoustical perception”, on the other hand, relies on acoustical listening and provides a phenomenological description of the sounds in terms of their acoustic

¹² *Ibid.*, 245.

qualities. Purely acoustical listening, however, is quite improbable: listeners do not perceive the acoustical environment in terms of its acoustic qualities but rather in terms of recognisable “events”.¹³ What matters, is not the continuous flow of sounding energy, but “music-as-heard” and the way the music user makes sense of it. Events, further, are continuous in their unfolding but discrete in their labeling. They allow the listeners to “recognise” something rather than “experiencing” it as something that unfolds over time, with the danger that they stop acoustical processing in favour of conceptual labeling¹⁴.

The “percept/concept dichotomy” is related to the way human listeners structure the acoustic flow. Listening embraces both perceptual immediacy and conceptual abstraction. It brings together continuous and discrete processing, stressing both the idiosyncrasies of the sonorous unfolding — which is continuous — and the process of sense-making which can be intermittent in applying discrete labels to slices of the sounding flux. This is basically the tension between the “bottom-up” and “top-down” approach with sensory information being presented to the senses in a continuous way and the mind applying discrete labels to chunks of information. The former provides the raw material — the percepts — which is processed in a bottom-up approach; the latter tries to reduce the complexity of the sounding flux to conceptual categories, involving a more economical top-down approach. As such, listening is both an “experiential” and “conceptual” affair.

The distinction between “internal and external semantics”, finally, is related to the previous dichotomies. Internal semantics is concerned with self-reference, with the identification of sonic events and their interrelations. It involves a hermeneutic moment in defining “something as something” (e.g. the sound of a clarinet, a typical chord or cadential formula, etc.) with denotation of elements being dependent on the process of recognition through identification and differentiation. What is eligible for denotation is not mainly reducible to extramusical reference, but is referring to the sonorous articulation and its identifying qualities. Music, in this sense, is a carrier of immanent meaning, with sounding elements — the musical *denotata* — as recognisable entities that can be assigned some meaning or semantic weight.¹⁵ The (external) reference, in this view, collapses to blend with the actual sound which acquires some conceptual quality. The denotation of the note “g”, e.g. does not refer to the vibratory sound event, but to the recognition of the category or class that embraces the actualisation of this event. The reference, therefore, is not external but internal to the musical system.

¹³ Viki McCabe, Gerald J. Balzano, *Event Cognition: An Ecological Perspective* (Hillsdale, New Jersey – London: Lawrence Erlbaum, 1986).

¹⁴ Reybrouck, “A Biosemiotic and Ecological Approach”.

¹⁵ Mark Reybrouck, “The musical sign between sound and meaning”, in *Music and Signs, Semiotic and Cognitive Studies in Music*, ed. Ioannis Zannos (Bratislava: ASCO Art & Science, 1999), 39–58.

Musical semantics, in this view, involves a process of sense-making that goes beyond a merely acoustic description of the sound. What matters are not merely the concrete-sounding events — the physical data — but also the abstract terms that are disengaged from their existential dependency from the particular things they are referring to. To delimit musical *denotata* thus implies a generalised reflection of sonic reality, and this is a transition from “percept” to “concept”. Conceptualisation, however, is discrete and symbolic rather than continuous and analog. Sense-making, on the other hand, involves both continuous and discrete processing of the sound. What is needed, therefore, is a kind of musical semantics that is co-perceptual, in applying labels to focal points or temporal extensions of the sonorous unfolding that is continuous in its presentation to the senses. The labeling, for short, keeps step — is co-perceptual — with the perceptual experience proper, but is discrete in its assignment of conceptual categories.

Bringing together these dichotomies should provide a semiotics for which the abstract is really material, a real semiotics of singular potential, which is grounded in the real and natural experience.

Perceptual judgments and the symbolic approach

Music is a sounding art which is actualised in its sonorous articulation through time and which can be objectified by providing means for portraying the continuous acoustic signal. Making sense of music, however, must go beyond a mere acoustical description of the sound. What matters is not merely the continuous flow of matter in the physical world, but the perceptual and cognitive processes of the knower, or put in other terms: how human listeners structure the acoustic flow. This is the basic tension between the “bottom-up” and “top-down” approach with a critical distinction between the richness of sensory experience and the economy of thinking: do the listeners process all the sensory information which is presented to their senses in a continuous way (bottom-up) or do they rely on cognitive mediation, with the mind applying discrete labels to a continuous unfolding (top-down)?

It is possible, in fact, to conceive of either sensory realia or their symbolic counterparts, but it is reasonable to take a “realist position” as a starting point — this is the empiricist claim of perception — which means that there really is something “out there”, which is already structured in the environment. This calls forth the veridicality of perception and the possibility to speak of perception in objectivist terms. Cognition, however, relies on principles of “cognitive economy” as well and the same holds true for music cognition, which relies both on experience and conceptualisation.

Conceptualisation, in fact, holds a “symbolic approach” to cognition. As a means for conceiving of something that is not physically present, symbolisation relies on signs in the scholastic conception of reference: *aliquid stat pro aliquo*. The sign process, in this conception, breaks up in something that signifies and something that is signified, which is, in fact, the Saussurian distinction between *signifiant* (that which signifies, the material sign vehicle) and *signifié* (that which is signified). This distinction has proved to be very fruitful for an operational approach to the sign process but has been lacking in not including the consciousness of the interpreter in the process. Semiotics, therefore, had to wait for Peirce who put the sign in a triadic relation of sign, object and interpretant:

A sign, or representamen, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the interpretant of the first sign. The sign stands for something, its object.¹⁶

The problem of meaning, in this view, addresses the sign as well as the sign user and his/her disposition to react upon the sign. It calls forth the conception of interpretant which Peirce defines as the proper significate effects of signs.¹⁷

Musical meaning, accordingly, is not reducible to a mere series of sensations. What really matters are not the sounds proper, but the listener’s reactions to the sounds. This brings us to the three fundamental propositions of pragmatics as stated by Peirce.¹⁸ The first restates the famous adage of Aristotle: “*Nihil est in intellectu quod non prius fuerit in sensu.*” The term intellectus, however, has a rather broad definition here, referring to all general ideas that are present in each possible kind of representation. The term sensus, on the other hand, is every “perceptual judgment” that is at the very base of critical thought. The second proposition states that each perceptual judgment contains general elements, allowing particular propositions to be restated as universal ones. And the third proposition, finally, states that our perceptual judgments are to be regarded as an extreme case of abductive inference, from which they differ in being absolutely beyond criticism. The abductive suggestion is an act of insight, an idea of putting together what we had never before dreamed of putting together and which flashes the new suggestion before our contemplation.¹⁹ This means that the perceived object is presented as a whole and as a unity before we even grasp its intelligibility.

¹⁶ Charles Sanders Peirce, *Collected Papers of Charles Sanders Peirce: Vol. 2. Elements of Logic*, ed. Charles Hartshorne and Paul Weiss (Cambridge Massachusetts: Harvard University Press, 1960), 135.

¹⁷ Charles Sanders Peirce, *Collected Papers of Charles Sanders Peirce: Vol. 5. Pragmatism and Pragmaticism* and *Vol. 6 Scientific Metaphysics*, ed. Charles Hartshorne and Paul Weiss (Cambridge: Harvard University Press, 1965), 326.

¹⁸ *Ibid.*

¹⁹ Peirce, *Collected Papers: Vol. 5. and Vol. 6*, 112–13.

Categorisation and cognitive economy

The general elements in perceptual judgments call forth processes of categorisation, which are reducible to two major claims: the principle of cognitive economy and the principle of reality. Stressing the importance of providing the maximum of information with the least cognitive effort — this is cognitive economy — they allow the cogniser to render discriminably different things equivalent, to group them into classes, and to respond to them in terms of their class membership rather than their uniqueness.²⁰ This means that genuinely diverse inputs lead to single outputs, without preserving the shape, size, position and other formal characteristics of the stimulus.²¹ As such, categorisation is used as a tool for managing a complex environment: it is fundamental to any sort of discrimination task and is indispensable in using previous experiences to guide the interpretation of new ones. Categorisation, further, mostly starts from the assumption of an implicit ontological realism — as advocated in the early work of Rosch²² —, claiming that the perceived world is not unstructured, but consists of real and natural discontinuities and co-occurrent properties. It takes the categories in the external outer world for granted, as advocated in “objectivist cognition” or “objectivist semantics”. Categorisation, however, does not deal with “ontological categories” but with “conceptual structures” which contain constituents differentiated by major ontological category features such as thing, place, direction, action, event, manner and amount, smell and time.²³ As such, it brings together the claims of “objectivist” and “conceptual” or “cognitive semantics”.

Listening, in this view, is a process of sense-making that reduces the virtual infinity of information of the perceptual flux to a manageable and limited set of perceptual “categories”. As such, it calls forth symbolic processing that relinquishes the particularities and idiosyncrasies of sensory experience in favour of forms of conceptualisation which process the incoming information in a much more economical way. As such it is an important cognitive tool that transcends perceptual bonding and that allows “autonomous processing” that goes beyond temporal and spatial constraints.

Autonomous processing, further, is related to the use of “signs”. Dealing with music, in fact, is not reducible to direct reactivity to the sounding stimuli but involves processes that involve cognitive mediation as well. Central in this process is the shaping of the human-environment interaction since the human being is not programmed

²⁰ Jerome Bruner, Jacqueline Goodnow, George Austin, *A Study of Thinking* (New York: Wiley, 1956).

²¹ Ulric Neisser, *Cognitive Psychology* (New York: Appleton-Century Crofts, 1967); Ulric Neisser, *Cognition and Reality* (San Francisco: Freeman, 1987).

²² Eleanor Rosch, Barbara Lloyd, eds. *Cognition and Categorization* (Hillsdale, New York: Erlbaum, 1978).

²³ Jackendoff, *Consciousness*.

to react upon stimuli in a simple causal way (stimulus-response) but in a way that is mediated by a mediating instance. The pioneering work of Vygotsky²⁴ is important here. Leaning upon Engels' concept of human labour and tool use as the means by which man changes nature and transforms himself, he extended the concept of mediation in human-environment interaction to the use of signs as well as tools:

The inventions and use of signs as auxiliary means for solving a given psychological problem (to remember, compare something, report, choose, and so on) is analogous to the invention and use of tools in one psychological respect. The sign acts as an instrument of psychological activity in a manner analogous to the role of a tool in labor.²⁵

The basic analogy between sign and tool rests on the mediating function that characterises each of them. As such they may be subsumed under the same category of mediated activity. One major difference, however, is the different way they orient human behaviour:

The tool's function ... is externally oriented; it must lead to changes in objects [...] The sign, on the other hand, changes nothing in the object of a psychological operation. It is a means of internal activity aimed at mastering oneself, the sign is internally oriented.²⁶

The sign operation, then, requires an intermediate link between the stimulus (S) and the response (R), as a kind of "second order stimulus" that is drawn into the operation it fulfills. The result is a new relation between S and R, with the subject being actively engaged in establishing such a link. In this new process the direct impulse to react is inhibited, and an auxiliary stimulus that facilitates the completion of the operation by indirect means is incorporated. This auxiliary stimulus transfers the psychological operation to higher and qualitatively new forms of behaviour that break away from biological development and create new forms of a culturally-based psychological process. Or, as Vygotsky puts it: "All the higher psychic functions are mediated processes and signs are the basic means used to master and direct them".²⁷

Musical sense-making and the use of signs

Signs are rather general and abstract in representing reality. Music, on the other hand, is a sounding phenomenon with the sonorous articulation as a primary category. The problem, therefore, is the tension between a general description of

²⁴ Lev Vygotsky, *Mind in Society. The Development of Higher Psychological Processes* (Cambridge, Massachusetts – London: Harvard University Press, 1978).

²⁵ Lev Vygotsky, *Thought and Language* (Cambridge, Massachusetts – London: MIT Press, 1962), 52.

²⁶ Vygotsky, *Mind in Society*, 55.

²⁷ Vygotsky, *Thought and Language*, 56.

music at an abstract-symbolic level and the idiosyncrasies of the sonorous articulation which are concrete. Musical signs should encompass both categories of description.

A starting point can be the tripartition of Bense²⁸ who distinguishes between the sign as a “means” – this is the material sign vehicle – that refers to an “object” and the meaning it is given with respect to an “interpretant”. Every sign thus operates at three levels that stand in a hierarchical relation to each other. The allocation of signs, therefore, proceeds from the material signal (the means) over the level of object to the level of the interpretant.

The central problem, however, is the relation between the sign as a means and its object. As contrasted with words or images that can be easily distinguished as a means from the object they refer to, it is not easy to distinguish the musical means from their objects. Music is not referring to extramusical “objects” in an unambiguous way – there is no lexicon – , but is referring to itself. This could be stated in Saussurian terminology as a process where “signifiant” and “signifié” blend together.

Musical signs, in this view, should be elements of a self-referential semantics and their “denotation” should be defined on the basis of a process of recognition through identification and differentiation. Music, then, is the carrier of immanent meaning, and the musical sign is a recognisable entity that is assigned some semantical weight. The denotative aspect of musical semantics, therefore, is not reducible to an extramusical reference in the strictest sense, but refers to delimited segments of the sonorous articulation that acquire some conceptual quality. The reference, therefore, is not external but internal to the musical system. At the level of the means it is possible, further, to rely on the conceptual work of Peirce²⁹ who distinguishes between three categories of signs, dependent on the rather qualitative character of the sign (*qualisign*), the singular or unique character of its appearance (*sinsign*) and the lawfulness of the sign (*legisign*). Translating this to the realm of music should read as follows: the sonorous articulation, in its sounding qualities can be defined in terms of qualisigns, the concrete and unique articulation as a sinsign, and the categories the listener assigns to the music as legisigns. This conceptual framework has been refined still further by Morris with regard to the generality of reference:

In so far as a particular act of pointing can denote only a single object, it has the state of an index [indexical sign]; if it can denote a plurality of things (such as the term “man”) then it is combinable in various ways with signs which explicate or restrict the range of its application [characterising sign]; if it can denote everything (such as the term “something”), then it has relations with every sign, and so has universal implication, that is to say, it is implicated by every sign within the language [universal sign].³⁰

²⁸ Max Bense, *Zeichen und Design. Semiotische Ästhetik* (Baden-Baden: Agis, 1971).

²⁹ Peirce, *Collected Papers: Vol. 5. and Vol. 6.*

³⁰ Charles Morris, *Foundations of the Theory of Signs, Vol. 1, nr 2* (Chicago – London: University of Chicago Press 1975 [1935]), 48.

The combination of “indexical” and “characterising sign” (e.g. this horse) is very fruitful. It unifies the definiteness of the reference of the indexical sign (*this* horse) with the expectation that is implied in the characterising sign (*this horse*). As such it combines an abstract and concrete approach to dealing with the sounds, and reflects the old epistemological problem of what Scotus called “Common Nature” and “Haecceity”. To quote Peirce again:

If Socrates is a truly man, there must be something “in” Socrates which is the basis for that assertion. In addition, there must be a principle by which Socrates is the real, unique, individual he is. Scotus calls the first principle the Common Nature, and the second the Haecceity [...] The word “haecceity” functions like “uniqueness” [...] Then haecceity is the “ultimate actualizing entity.”³¹

These claims are rather general. It is possible, however, to translate them to the realm of music and to conceive of musical sense-making as an act of mental pointing that keeps step with the sonorous unfolding in a continuous process of epistemic interactions with the sounds. These interactions can be exploratory to a great extent – in searching for new percepts and the distinctions between them – but they can trigger processes of recognition that activate patterns of schematic knowledge that are part of our cognitive structure as well (concepts). Speaking of a violin in general, e.g., does not imply the physical presence of an actual instrument. It can be conceived at a merely symbolic level – as can be done with all meaningful units of a linguistic lexicon. As such, there is a dynamic tension between experience and recognition with the former capturing the temporal unfolding of the articulation of the sound, and the latter relying on processes of abstraction and generalisation.³² The former holds a dynamic-vectorial approach to the world and is directive in nature; the latter relies on distancing and polarisation between the cogniser and the world.³³

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³¹ John Boler, *Charles Sanders Peirce and Scholastic Realism. A Study of Peirce's Relation to John Duns Scotus* (Seattle: University of Washington, 1963), 53.

³² Mark Reybrouck, “Music cognition and real-time listening: denotation, cue abstraction, route description and cognitive maps”, *Musicae Scientiae (Special Issue) 2010*: 187–202.

³³ Mark Reybrouck, “Similarity perception as a cognitive tool for musical sense-making: deictic and ecological claims”, *Musicae Scientiae, Discussion Forum (4B) 2009*: 99–118.

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