

Conceptual Metaphor Theory and the Conceptualization of Music

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ABSTRACT

In this paper, the author investigates the application of conceptual metaphor theory to music and suggests a change of perspective from a top-down approach to a bottom-up usage based approach to the conceptualization of music.

Keywords

conceptual metaphor, cross-domain mapping, image schema, basic metaphor, embodied knowledge, language acquisition, music.

1. INTRODUCTION

Music and language are two cognitive systems that are uniquely human. In reasoning or speaking about music, we make use of basic and conceptual metaphors. If we perceive a piece of music, we need to rapidly process the incoming auditory input and integrate it into mentally manipulable units or mental representations that can be further processed. If we describe a piece of music, we use specific language, e.g. the same language that we would employ if we were to describe physical, organizational or architectural structures.

Besides describing the structure or order of any given piece of music, we also talk about how a given piece of music makes us feel. Furthermore, music is also conceptualized inter-subjectively: people can agree on a piece of music, or they could feel the same way about a piece of music.

In conceptualizing music non-verbally, e.g. if we simply listen to music, we "make sense" of the music without words, by recognizing melodic movements, harmonic changes, we are able to hum and sing along a familiar tune, characterize a piece of music as cheerful or sad, or pick out single features such as rhythm, pitch or timbre to ascribe characteristics to them.

All these instances of conceptualizing music require basic metaphors, and conceptual metaphors that are, in this regard, mappings from a concrete source domain outside the realm of music to the abstract and non-verbal target domain of music.

Source domains for the conceptualization of music are structures and buildings, emotions, and image schemas, such as SOURCE, PATH, VERTICALITY, RELATIVITY, FORCE DYNAMICS, and CAUSED MOTION. The basic metaphors used in the conceptualization of music are cross-modal and perceptual-affective metaphors.

The original theoretical framework was set up by Mark Johnson [4], George Lakoff [7], and Lakoff / Johnson [6].

Jay A. Seitz [17] developed a theory of basic metaphor (BMT), in order to show that for automated and unconscious metaphorical mappings the system of mirror neurons and the sensory and motor areas of the brain are involved unconsciously and automatically.

This paper investigates how people come to select certain source domains to map them onto the target domain music. For language, there exists a large body of cross-linguistic examples. For music, however, it is to be examined how and why people go about in selecting source domains from concrete experience. Furthermore, the role and the nature of image-schematic structure in the domain of music is yet unclear. Basic metaphor seems to be a likely starting point to shed some light into the concept of image schema, as well as into how people come to use source domains of concrete physical experience in the categorization of higher-order elements and analogies.

The debate on image schemas is longstanding, as there are numerous approaches to image schemas. I will suggest a weak embodiment approach to basic and conceptual metaphor, and image schemas.

2. Theoretical framework: Conceptual Metaphor Theory, Basic Metaphor Theory, Image Schema Theory

2.1 Basic Metaphor

The conception of basic metaphor is an alternate approach taken to account for the non-conceptual and unconscious nature of mappings that occur in the fast, effortless, and unconscious processing of "stereotypical forms of behavior that are conditioned by evolution for immediate and efficient use". [17] Seitz's major claim is that humans are pre-wired to make links between different domains of experience. He postulates that there are four different kinds of metaphor that are "uniquely mapped onto specific brain networks". [17] The four types of basic metaphor are perceptual-perceptual, cross-modal, movement-movement, and perceptual-affective. These metaphors are non-conceptual and operate outside of conscious awareness.

Basic metaphor theory stands in opposition to conceptual metaphor theory insofar, as conceptual metaphor requires more abstract conceptual relations and might entail conscious mechanisms as well. [17]

Although Lakoff and Johnson, as well as Fauconnier and Turner argue that conceptual metaphor operates outside of conscious awareness, they claim that higher-order connections across conceptual domains are used to map structure from concrete source to abstract target domains. The crucial difference between the two approaches is that CMT takes a strong embodiment top-down approach that takes the embodied nature of a system of conceptual metaphor for granted, at least to some extent. The anchor for the embodiment of conceptual metaphors are image schemas. The fundamental problem is that image schemas in Lakoff's and Johnson's regard are skeletal patterns that emerge through our sensory-motor experience.

Image schemas are derived from perceptual experience and a prerequisite structure for organizing experience. [2]

The empirical evidence that Lakoff and Johnson offer in their initial approach to both, image schema structure and conceptual metaphor theory, comes from cross-linguistic studies.

Basic metaphor theory does not rely on image schemas as the anchor for the embodied nature of metaphor. At least, Seitz does not mention image schemas. According to Seitz, the system of metaphoric relations is innate, or rather, the ability to develop a system of basic metaphors is innate.

Seitz takes a strong embodiment perspective, claiming that humans are pre-wired for mappings across disparate conceptual domains. His approach, however, is a bottom-up approach, as he takes into account how prelinguistic and extralinguistic content is mapped onto brain networks. [...] "motor structures in the brain play a significant role in cognition". [17]

This is consistent with findings from studies by Barsalou, Pulvermüller, and Gallese and Lakoff, that assume that semantic processing automatically recruits low-level sensory and motor systems. [12]

Empirical evidence for a system of basic metaphor is also provided by the mirror system for "action execution and action recognition in the primate cortex", that suggests "a close association of intended movements carried out by an actor and observed movements performed by a viewer". This mirror system is underwritten by mirror neurons in the premotor cortex that allow for a link between externally observed events to internally generated motor actions. Consequently there is a coordinative relationship between gesture and intentional communication that facilitates the establishment of intentional mental states and the ability to perceive them in others. [17]

This view is supported by findings from studies by Tomasello. [16]

2.2 Conceptual Metaphor

The conception of metaphor in cognitive linguistics contradicts the conception of metaphor in literary studies in fundamental ways: Metaphor is not a stylistic device, but an experiential and cognitive process, in which we use properties, relations, and entities that characterize one domain of experience and/or knowledge (source domain) to understand, think, plan, and talk about a second domain (target domain) that is different in kind from the first. [7]

According to CMT, source domains come from everyday bodily perception and movement. They are grounded in embodied experience (grounding hypothesis). Source domains are needed to make sense of target domains. By definition, a conceptual metaphor is a unidirectional mapping across cognitive domains. The mappings are tightly structured and structure from a source domain is (partially) mapped onto a target domain. The mapping is highly selective, as there are ontological correspondences according to which entities in the source domain (agents, objects, trajectories and so forth) systematically correspond to entities in the target domain. The point is, that we do not copy structure from SD to TD, but we import whole sets of knowledge / inferences / entailments from the source domain into the target domain. The mapping does not work according to an arbitrary rule, but it is a tightly packed, highly selective and constrained process that allows us to reason about abstract domains. [7]

Lakoff and Johnson use mnemonics to suggest the mapping, to provide an easy remembrance of what mappings there are in the conceptual system, so they developed a strategy for the naming of these mappings. [6]

The form of a mnemonic name is either TARGET-DOMAIN IS SOURCE-DOMAIN, or TARGET-DOMAIN AS SOURCE-DOMAIN. [6]

The names of mappings have a propositional form. This must not be mistaken for mappings to be propositions. Mappings are sets of conceptual correspondences. Evidence for the existence of a system of conventional conceptual metaphor is of five types. Apart from psycholinguistic experiments there are generalizations that govern polysemy, inference patterns, novel metaphorical language and patterns of semantic change that prove the existence of a system of metaphor. [7]

The most famous example is probably the LOVE IS A JOURNEY metaphor. We conceptualize love in terms of journeys: The mnemonic is used for a set of ontological correspondences characterizing the mapping. The lovers correspond to the travelers, the relationship corresponds to the vehicle, common life goals correspond to common destinations, and so on. [7]

Lakoff and Johnson take a strong embodiment perspective: they assume the direct engagement hypothesis: to achieve representation, semantic content necessarily and directly recruits the sensory and motor systems used during experience.

The major claim of the direct engagement hypothesis is that "sensory and motor systems are engaged during semantic access without being mediated by other cognitive processes". [12]

2.3 Image schemas

In general, image schemas are patterns of embodied experience, that are flexible enough to be used in the structuring and understanding of our perception. The term was independently coined by Mark Johnson and George Lakoff. Johnson used the term in his book "The body in the mind", and Lakoff introduced the term in his book "Women, Fire, and Dangerous Things" (Case study 2).

According to Johnson's definition, an image schema is a directly meaningful pre-conceptual structure, which is grounded in our bodily movements through space, perceptual interactions with our environment and our ways of manipulating objects. Image schemas are highly schematic gestalts that capture structural contours of sensory and motor experience. Image schemas allow for the integration of information from multiple modalities, that is, they are not restricted to the domain of language. Image schemas operate below conscious awareness, and they are prior to and independent from other concepts. They have internal structure and are highly flexible. In connection with the human capacity for conceptual metaphor, image schemas were assumed to be the embodied anchor for the human conceptual system.

The central idea was to solve the mind-body problem by explaining how the embodied mind can be capable of abstract thought.

Lakoff as well as Johnson presented empirical evidence from cross-linguistic studies that showed that abstract domains are conceptualized in terms of spatial relations. The list of examples has not been completed so far, and there is an ongoing discussion about the level of specificity, the role of perceptual information and the pre-conceptual and unconscious nature of image schemas.

There is no unified theory of image schemas yet, but two major strands in image schema research can be characterized: the cognitive psychological / neuroscientific approach and the cognitive anthropological / cognitive cultural linguistic approach. [3]

Both strands however, state that culture plays a significant role for the formation of image schemas. Different use of tools in

different cultures result for instance in different image schemas that become observable in language. [3]

The relevance of image schema theory as an integral part of cognitive linguistics has been shown in numerous studies, e.g. [1]; [10]; [11].

As music is a nonverbal conceptual domain, I take up Jean Mandler's approach to image schema theory as well as Michael Tomasello's approach to child language acquisition and human communication, as these theories take into account how non-verbal infants go about in forming concepts. The analogy between image schema formation in non-verbal human infants and the creation of meaning in music might shed some light on the question how and why humans choose certain source domains to map them onto musical target domains.

Developmental psychological experiments have shown, that human infants are "programmed" to observe motion. Jean M. Mandler defines image schemas as dynamic analog representations that consist of schematic versions of spatial information and movements in space. These representations are derived from perceptual information, but they do not have visual, auditory, or kinesthetic properties anymore. The argument against a visual representation is that iconic representation requires an interpretation of symbols, which infants do not have. There would not be an advantage in having image schemas as representations. [9]

Preverbal concepts, such as self-motion, source, path, goal, animate and inanimate things, containment and support are represented by image schemas. These image schemas belong to the standard inventory and they are present across languages and cultures. They allow for grammatical learning to take place. Infants arrive at having image schemas as representations by Perceptual Meaning Analysis, a process which analyses perceptual displays and recodes them into a reduced form that enables conscious thought. The format of the re-descriptions carried out by Perceptual Meaning Analysis is the image schema. Image schemas themselves are not accessible, but they structure the concepts that can be brought to mind either as images or as words. [9]

Image schemas underlie the explicit conceptual system. They are the input structure for source domains of conceptual metaphor: We reason and speak about time in terms of movement in space, that is, we take a source domain of concrete knowledge of objects and agents moving in space to talk and reason about an abstract target domain.

For language acquisition, image schemas play a crucial role, as they provide the level of representation that is intermediate between perception and language and they facilitate language learning. Children will learn nouns first, as they refer to concrete objects that are easily individuated from their environmental surroundings. [16]

Later they will learn verbs and combine them into two-word utterances that resemble the image schematic structure that they adopted in Perceptual Meaning Analysis.

3. Conceptual Metaphor, Basic Metaphor, Image Schemas, and Music

How do basic metaphors, conceptual metaphors, and image schemas relate to music?

I have given a brief overview over how metaphors of both kinds and image schemas govern our ordinary everyday language, perception and reasoning. The application of metaphor theory to the domain of music is not new, but up to now, the strong embodiment approach and the grounding of conceptual

metaphor in bodily experience have been taken for granted. Recent research on image schemas and the neural theory of metaphor support an embodiment approach, but evidence from neuroscientific and psychological experiments hold both approaches, the weak embodiment approach as well as the strong embodiment approach for likely candidates to explain the role of sensory and motor system involvement in semantic representation.

Every human has to acquire the musical idiom of his or her culture in early childhood. As with language, the mere exposition to music is enough to start the acquisition process, if the setting is a joint-attentional frame. Human infants learn language because of intentionality, image schemas and joint-attentional frames. The learning process is supported by the infants environment, as parents or reference persons close to the infant will talk to the infant, point out objects, agents and actions, and thereby create situations where either the infant's attention is directed at something in the environment, or the infant, because of intentionality, will direct the other person's attention to something in the environment. [14]

Before the infant has acquired language, she has image schema representations and pre-verbal concepts. A system of basic metaphors starts developing before the infant has learned language. Infants are able to structure actions and events, otherwise their mental life would be chaotic and they would not be able to learn language.

The process of music acquisition should work according to similar principles. First musical experiences are made by listening to lullabies. The child will listen to the parent's or reference person's voice and establish a connection between the situation and the song. Lullabies are rather simple, that is to say the pitch range is very limited, the rhythm is soft and slow, and the infant will "get to know" the lullaby after having listened for a while. There is a joint-attentional frame, as the reference person or parent directs the infants attention to the lullaby and to the intention of going to sleep.

Nursery rhymes are also among the first musical experiences that any normal infant makes. The interaction between infant, reference person, and music facilitates the acquisition of the musical idiom.

Perceptual-perceptual and cross-modal basic metaphors should mediate the process, as emotions are linked to the musical experiences the child makes (e.g. cheery vs sad tune, lively rhythm in nursery rhymes vs slow rhythm in lullabies). Image schematic representations such as verticality (e.g. pitch relations) and self-propelled movement (e.g. melodic movement) facilitate the process of meaning construction or conceptualization. Movement-movement metaphors facilitate the recognition of melodies. Over time, the child will be exposed to more complex musical structures, but she will have formed mental representations or concepts of the building blocks and the syntactical rules of the musical idiom of her culture.

In a later stage, when the child has acquired language, conceptual metaphors will govern reasoning and talking about music. Source domains will be events and actions, self propelled movement, force dynamics and states.

3.1. MUSIC IS ARCHITECTURE and the EVENT STRUCTURE metaphor.

Johnson and Larson show that architectural metaphors are an indispensable part of musical discourse. [5]

They claim that the MUSIC IS ARCHITECTURE metaphor is essential in creating music as well as in listening to music. The metaphor is often invisible, as it is entrenched, but it is

unavoidable, because cross-domain mappings are motivated as they are part of our conceptual system.

The MUSIC IS ARCHITECTURE metaphor has experience and knowledge about architectural structures as the source domain, and specific types of physical structure in the target domain. For any mapping, music is always the target domain, as we take our knowledge of the concrete physical world to reason about music.

The underlying mapping (also called primary metaphor) is ORGANIZATION IS PHYSICAL STRUCTURE. [5]

Primary metaphors are based on recurring correlations between certain sensory-motor experiences and subjective experiences and judgements that we make, they resemble basic metaphors to a certain extent. Primary metaphors give rise to more complex metaphorical mappings, such as MUSIC IS ARCHITECTURE. The understanding of music as physical structure is culturally shaped on the one hand, on the other hand it is grounded in our experience of functions as connected to physical structure.

The mappings would look according to the following table:

Source Domain	Target Domain
structure/buildings	piece of music
process of construction	building to climax/cadence, etc.
span	interval
vertical spatial dimension	interval size
horizontal spatial dimension	temporal duration
structure vs. ornament	structure vs. ornament
foundation	underlying structure
pillars	pillars of harmony
arch	melodic arch, arch form
base	bass voice, base of melodic action
bridge	bridge/passage/section
physical forces	musical forces (emotion)
balance	formal balance
symmetry	symmetry in pitches or durations
vertical spacing	registral spacing
horizontal spacing	rhythm
supporting members	stable harmonic/formal elements

The analogical correspondences might seem trivial at first sight, but music is an abstract domain, so knowledge from a concrete domain is transferred and used to conceptualize the target domain of music.

The EVENT STRUCTURE metaphor structures music in terms of events and actions. If conceptualizing music requires the construction of meaningful stable units that can be mentally manipulated, then the sub-mappings of the EVENT STRUCTURE metaphor should be elaborations of basic metaphors.

According to Lakoff the EVENT STRUCTURE metaphor contains the following sub-mappings:

STATES ARE LOCATIONS (bounded regions in space)
 CHANGES ARE MOVEMENTS (into or out of bounded regions)
 CAUSES ARE FORCES
 ACTIONS ARE SELF-PROPELLED MOVEMENTS
 PURPOSES ARE DESTINATIONS
 MEANS ARE PATHS (to destinations)
 DIFFICULTIES ARE IMPEDIMENTS TO MOTION
 LONG TERM, PURPOSEFUL ACTIVITIES ARE JOURNEYS
 EXTERNAL EVENTS ARE LARGE MOVING OBJECTS

For music, the mappings of the EVENT STRUCTURE metaphor would have different target domains:

MODULATIONS ARE CHANGES OF LOCATION
 CHANGES OF INSTRUMENTATION ARE CHANGES OF LOCATION
 CHANGES OF RHYTHMIC PATTERNS ARE SELF-PROPELLED MOVEMENTS
 KEYS ARE STATES
 RHYTHMS AND METERS ARE STATES
 MELODIES ARE MOVING OBJECTS
 MELODIES ARE SELF-PROPELLED MOVEMENTS [7]

It is important to note that not all of the mappings are active simultaneously. Metaphorical mappings are highly selective and sometimes only partial structure is mapped.

4. Towards a Cognitive Semantic Theory of Music: Outlook on further investigation

Following the argument of Seitz, that music involves all four kinds of basic metaphors: perceptual-perceptual ('the violin chirps like a bird'), cross-modal (two domains of language and music), movement-movement (recognition of melodic or harmonic movement), and perceptual-affective (music and emotion, e.g. bright sounds, cheery tune), the application of the EVENT STRUCTURE metaphor seems to be a good starting point. The EVENT STRUCTURE metaphor contains various sub-mappings, or basic metaphors. Furthermore it has a rich image-schematic structure, that has to be further analyzed. It is possible, that conceptual metaphor theory does not suffice to capture all the possible mappings and possible meanings of music.

The question if and how image schemas play a role in conceptualizing music can be tackled from two angles: Firstly, there is substantial research on the role of sensory and motor systems in semantic representation. Both approaches, the direct embodiment hypothesis and the weak embodiment hypothesis are candidates for offering an explanation on the role of sensory and motor systems in semantic representation. The initial question, how humans bridge the gap between the non-verbal domain of music and the domain of language needs a unified image schema theory, as well as a closer investigation on basic and conceptual metaphors. A usage-based approach to musical idiom acquisition could be useful in this regard, as cultural aspects can be taken into account. Furthermore, the investigation would benefit from a bottom-up approach, because that would allow for an explanation how we go about in choosing certain mappings that we map onto the target domain of music, and the development of a system of conceptual metaphors in ontogenesis could be explained.

To investigate if there is a universal image schematic structure that is made use of in reflecting about music, there is a small empirical study in preparation that will have two groups of

participants. The first group consists of musically educated individuals aged 19-27. The second group consists of individuals that are not musically educated, aged 19-29. Individuals have different native languages, including Polish, Russian, Spanish, Greek, Arabic, French, Chinese, Korean, German, and Croatian. The task is to listen to a piece of instrumental music and then give a description of the music in the respective native language. I expect both groups of participants use similar cross-domain mappings across languages.

Another issue that needs to be investigated further is if the acquisition of music is also facilitated by conceptual integration or blending. Conceptual metaphor allows for unidirectional mappings, so it could be possible that metaphor as a process is too parsimonious to account for musical creativity. Conceptual integration, or blending, includes at least four mental spaces, and blended spaces can become inputs to new blends, whereas target domains of conceptual metaphors cannot become source domains for novel conceptual metaphors.

5. ACKNOWLEDGMENTS

Our thanks to ACM SIGCHI for allowing us to modify templates they had developed.

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