

Maps and Paths of Music Perception

Maps and Paths

Whatever we do, most of our activities – and listening to music is one of many possible activities – follow plans and fulfill particular purposes. In daily life we frame the course of our activities, and we project what we will do first and what should follow next. In our mind we “walk” in an imaginary “map” from one point to another. We are able to do so because we have done it ever and ever before. We have literally developed a mental “map” in our mind like a road-map of the area where we live. But this “map” is also concerned with intentions, goals, operations and procedures. That will be achieved by our work, either practically or mentally. And in doing something we activate particular paths of the map as a guide to our actions. As Margaret Boden stated: “Maps do not merely offer isolated items of information, but guide the traveller in various ways.” (Boden 1990, 47)

What we experience in daily life is also true in regard to other domains. The perception of aesthetic processes is bound to “maps” designed by former experiences. The way musical elements or models are represented in mind gives meaning to the music we perceive. That is, we activate the patterns we are already familiar with. These patterns are stored in neural networks that are – according to the connectionist model – characterized by distributed representation and self-organized processing. Therefore, the answer of how the human mind carries out information and recognizes something to be something is “to point to a network that has acquired the appropriate strength of connection” (Johnson-Laird 1988, 191). Consider this network as consisting of a large number of units (neurons) which are connected with each other. The mental representation of concepts, structures, actions etc. is generated by links (axons) connecting the representation of all elements involved. (Feldman 1989, 289 ff) When listening to music, an

acoustic stimulus initiates a complex neural activity: the perceived sound activates a neural path, which gives rise to an activity in another fraction, which activates a network of neural paths, and, at the same time, activates a network of musical representations.

Therefore, listening to music is like a walk on different paths limited only by the options of our mental representations. The representation itself functions as a map which offers different paths we can choose, depending on what is already represented by the map, that is, what we are already able to perceive and to recognize.

What we are able to recognize depends on what we have perceived and what is represented in our mind. It is salient that very often music evokes associations from outside independent of the inner structure of music. This means that there is something in a piece of music that activates a path which is connected to an existing “acting schema”, or a pattern, or some musical knowledge; but if there is no musical representation one deviates to non-musical features. The hypothesis is that the more formal musical representations are developed, the less non-musical associations are needed for the process of understanding. Or vice versa: the fewer musical representations are available, the more concrete associations, images, and actions replace musical understanding. Our educational concern is to know, how musical representations can be built, and how they can be expanded and differentiated.

Figural and Formal Representation

In a very sophisticated series of observations and reflections Jeanne Bamberger (1991) has precisely elucidated the growth of musical representation and their transformation from one stage to another. On occasion of children's drawings of simple rhythms (Bamberger 1982) she found two types of mental representation according to the aspect the children did focus on. She speaks of *figural representation* if the rhythm is segmented into motives and represented as a figure characterized by that what happens within the figural boundaries, and of *metric representation* if its elements are counted and represented as a chain of metric events.

In her work with an eight year old boy Jeff at the MIT learning lab (Bamberger 1991, 101 ff) she could observe how he gradually gained a new perspective of representing a familiar tune (*Twinkle, twinkle*). He was

asked to build the tune with Montessori bells (Bamberger 1991, 177 ff). Starting with a *figural representation* of the tune, he constructed the tune by placing the bells in the order of the tune. By this, he was able to play the tune by following the prepared order of the bells. Here the tune-path directly corresponds to the bell-path and the action-path.

Then, he learned to become more independent of a figural representation. He was now asked to play the tune with bells in a regular ascending pitch order. To achieve this, he had to find the right tune-path which was different from the bell-path and his action-path. Experiencing the difference between the tune-path and the bell-path, Jeff learned that the meaning of “next” in tune is different from “next” in tonal space of a scale. Furthermore, he learned to differentiate between the order of pitches in a scale from left to right, what is called from “low” to “high”, and the order of single tones in the melody, and – most important to him – he finally discovered that pitch is a stable property of a bell independent of its position. By the way, he developed a new path in his neural net of tonal space where he now could move up and down, going step by step or jumping from one to the next. The transition from a figural representation to an abstract model where the tune is represented by the position of its pitches in the scale, indicates a new level of *formal representation*.

The observation of this exciting development of intellectual musical growth gives the term of learning a new meaning. Learning is not only a matter of memory, and no longer only defined by the change of behavior, learning always refers to a change within the mental representations in terms of a transition from figural to formal representation and causes a transformation in the “map of the mind.” (Boden) By that process, one develops multiple representations and consequently the ability of “multiple hearings” (Bamberger) which in other words can be described as a new option of using different paths inside a cognitive map.

Listening Stories

This first look into the developmental growth of mental representations by Jeanne Bamberger’s research stimulated the idea to study mental processing while listening not only to an isolated rhythm, or a simple tune, but to a whole piece of composed music as a very complex stimulus. The proposition was to find a method how to reconstruct a cognitive listening-map of

the mind, and to show different paths which listeners are “walking” along. We found an appropriate instrument in the narrative method. We picked up a scenario of a “listening drama” according to an idea of Christoph Richter (1991). This drama (example 1) tells about the procedure of meeting a piece of familiar or unfamiliar music. The story only serves as a scaffolding that describes the following formal stages:

- the first impression including a spontaneous trial of identification (do we accept or refuse the music?),
- the integration of the music into the representational map (what kind of reactions, musical or non-musical associations, thoughts, recognitions does the music evoke, what kind of representation is actually activated?),
- the consequences of the fact that this music now lives in the “auditory” and belongs to our mental “equipment”.

First we asked students to observe their reactions upon a piece of music they would listen to, and then to write down their individual experience – not as a fantasy tale, but as a detailed description of their actual thoughts and associations according to the frame of the story. The technique of telling a story tends to distance the subjects from their emotional affection and opens the way for explanations about what is going on in their mind. There are, of course, many problems addressed in this study which have to be solved: the high complexity of music, the large number of variables involved in this experiment, the non-musical fantasy provoked by the drama, and its reduction into a formal description. Nevertheless, the listening stories give us an initial insight grasp of mental processing of complex music.

The Experiment

306 students of six German “Gymnasium” (High Schools at Freiburg) aged 10 to 19, and 72 students of an American Middle School (Oberlin, OH) aged 11 to 15 participated in the experiment. The music presented to the students was the third movement of Luciano Berio’s “Rendering” (1989). In this piece, Berio uses Schubert’s sketches for a projected D-major-symphony and integrates his own style of composing into the Schubert score whenever it comes to critical points where the inner structural coherence of the materials in Schubert’s partcell is not quite clear. This particular situation presents a music with two different languages or styles at the same

time. Therefore, it is difficult to identify the music as modern or traditional, and that presents the opportunity for the students to talk about their reactions and affections.

Procedures

The experiment itself took 90 minutes all together. First, all students were introduced to the experiment and asked some individual questions concerning their age, and their musical and social background. Then they were told the “drama” orally. In addition to this, it was discussed and explained what the purpose of the story was about. They had to understand that the king refers to the ego of the listener, that the auditory hall stands for the mind, and the “musical being” is a particular piece of music. After that, the students were introduced to their task to listen to a whole movement of a composition as the “musical being” that they will receive through auditory perception, and to observe what kind of reactions and affections will take place in their mind while listening to it. Just after the ending of the whole piece they were asked to put down their individual story following the scaffolding as a formal frame. For a better orientation they were given the text in the written version of example 1. Then the music was presented once and repeated once again if wanted. After this, they got 45 minutes of time to complete their writings.

Analysis

As a first step, we developed the structure of a mental map. For this, each individual story was analyzed statistically. All observations, either named by musical elements, or recognized as individual images or personal associations, and all significant terms were drawn from the text, and similar observations were clustered into groups. Those groups could be referred to general types of reactions on three different levels:

1. *associations* (A) referring to sensation (A_1), imagination (A_2), movement (A_3), action (A_4);
2. *musical cognitions* (M) referring to genre (M_1), form (M_2), musical character (M_3), instruments (M_4), structural elements (M_5);
3. *judgements* (J) referring to taste (J_1), aesthetic evaluation (J_2), objective facts (J_3).

These levels with their different zones shape the topographic structure of a literal “map of perception” (fig.1).

Then, each individual story was transcribed into such a map. For this, all notions and associations were brought into a chronological order according to their appearance in the story and put down into the different zones of the map where circles represent nodes in the neural net and arrows indicate the activated paths (fig. 1). The interpretation of a story in terms of those types was only accepted when at least two independent interpreters had come to the same result. This seems to be necessary to minimize the risk of interpreting the stories too subjectively which could distort the intention of the writer. This transformation enables us to show the individual story as a network of activated sensations and associations which may allow to reconstruct an actual “map of perception”. Then, each node in the network of the map can be quantified according to its position in the map. This procedure will allow to compare all of the maps with each another and to form clusters of perception. Those clusters can be correlated to any personal date.

Results

The reactions of the subjects – shown by their tests – were different. Some of the younger students put down only a fantasy tale with only little relation to the listening drama, but related to stories, or movies, or musics they had experienced just before. But all of them showed a clear reaction to that particular piece of music. Another group strictly refused that music. They did not want to hear it and to respond to it. They expressed their rejection with tremendously violent terms. A third group showed a surprisingly clear understanding of the compositional idea, although many of them could not label their cognitions with musically correct terms. In story 3 (see appendix) we notice a situation which only seems to be provoked by fantasy, telling about fox-hunting and a crime story. But nevertheless this girl has noticed a conflict between generations (father and son) who stand in opposition but are dependent of each other. What great metaphor of the two styles and musical languages which are integrated into a new composition! She obviously has experienced this conflict, but talks of “father” and “son” because she doesn’t know about Schubert and Berio, classical and contemporary music. On the contrary, the first and second stories reflect a much higher level of musical experience and, therefore, they tell us much more about

musical representation. Finally, the boy of story 4 refers the experienced music to his life, that means he can only activate paths in his representation map which are connected with general ideas of life. It is salient that there are still only little elaborated musical representations, he only recognizes some isolated elements (loudness, tonality, ups and downs in the melody). But he can easily learn to develop new paths in his map of perception starting with the established meanings.

The evaluation (Falk 1992, Babler 1993) of all maps establishes the following groups which can be discriminated significantly.

- A+ subjects with predominant representations on level A
[$A-M > 2/3 A \wedge A \geq 3$];
- M+ subjects with predominant representations on level M
[$M-A > 2/3 M \wedge M \geq 3$];
- A/M+ subjects who represent on both levels equally and show a larger number of activated nodes
[$A-M \leq 2/3 A \vee M-A \leq 2/3 M \wedge A+M \geq 6$];
- A/M- subjects who represent on both levels equally, but show only a small number of activated nodes
[$A-M \leq 2/3 A \vee M-A \leq 2/3 M \wedge A+M < 6$];
- J subjects who don't represent neither on level A nor on level M, but have only single representations on level J
[$A = M = 0 \wedge J \neq 0$].

The results of analysis of these groups and the relationship between the status of verbal representation and other factors like age, musical experience in school, and instrumental instruction is summed up by the following statements.

1. The difference between A and M increases with age, but in that way only A increases, but M keeps stable. Age and school instruction have no influence on the development of musical representations.

2. But if we relate the A representations to the number of M representations, we found that the increase of M representations directly corresponds to a repression or neglect of A representations. The average of A representations in the M+ group is significantly below the average of the peer group.

3. Furthermore, there is a salient correlation between the increase on the

M level and the duration of participation in instrumental lessons in comparison with the average of the peer group. On the other hand, the J group stays significantly below the average of instrumental lessons in the peer group.

4. Subjects with most activations on the M level (M+) and those with balanced representation on both levels A and M (A/M+) render the largest number of judgements. And those individuals are the only one who are able to formulate objective statements referring to compositional properties. If we look at those individuals who represent in J, we found those who range significantly higher on the M level.

5. Subjects who have no representations on the A and M levels render judgements as to taste only.

6. There is an obvious rank over all scales in the development of the types of representation: J → A/M → A+ → A/M+ → M+.

Interpretation

The fact, that age and music education at school does not affect the development of musical representation may be referred to the common aim of general music education which deals with appreciation or introduction into culture rather than with the development of aural skills.

The observation, that the increase of representations on the M level corresponds to a decrease on the A level verifies the hypothesis that one is no longer dependent on associations the more one has developed musical representations. Then one can understand music musically, we can listen to music with comprehension. Associations lose their importance as guidance for the attention.

It seems important that there is a significant correlation between instrumental lessons and musical representations. By playing a musical instrument one gains access to figural representation. And this facilitates the development of formal representation. As to now, we have good reasons for the assumption that figural representation is a necessary prerequisite for establishing formal representation.

The strong correlation between objective statements and musical representations on the one hand and judgements as to taste and missing representations on the A and M level allows to draw conclusions as to the student's mental behavior. If one only states that he doesn't like the music, he shows a deficient status of musical representation.

Mindful of the above mentioned limitations one can say that associative and verbal musical representations stay in an equivalent relation to each other as figural and formal representation. This explains the different developmental stages:

- At the very beginning of all cognition we find a global judgement about a sympathetic or antipathetic feeling.
- Then we talk about what we hear in terms we are familiar with: metaphors, analogies, images, synthetic impressions. This verbal representation becomes more elaborated with age because we are more experienced. When we listen to music and understand it in a more metaphorical way, we are often oriented on the sequence of time in which the music is performed. We jump from one to the next event, and remember isolated items (melodies, rhythms, colours, sounds, tensions, genres). This goes parallel to the development of figural thinking although it is not the same!
- Only if we have had the opportunity to develop figural musical representations, we will become able to develop formal representations. The best we can do is play an instrument. As a consequence of the development of formal representations, we develop more and more internal musical representations. An adequate musical terminology can be developed and used if a figural representation is symbolically encoded into terms and structurally transformed into formal representation.
- Only when musical representations are developed one is able to render objective statements on the compositional structure and the aesthetic value of a piece of music.

Conclusions

The stories tell us very clearly what is going on in the mind while students listen to music. In general, there can be found a strong relationship between the duration of instrumental lessons and a more analytical or musical description whereas students without instrumental experience used a more metaphorical description with non-musical associations. Furthermore, there seem to exist significantly differentiated types of maps, which have to be classified more distinctively. But the most crucial aspect for educational reasons is that we have got to get a first insight into the mental conditions of

musical representation which actually is activated by listening to an unfamiliar piece of music. It seems to be much easier to “understand“ (associate) musical “meanings“ or “contents“ rather than to follow the music formally, or to understand or recognize its “grammar“. But to come to terms with this problem, it calls for a curriculum that starts with the actual understanding, labels the perceived meanings and then transforms it into a symbolical (formal) representation. To talk about musical structures and functions without any representational architecture in the map of perception is psychologically nonsense; to distance students from the treatment of musical compositions in general music classes at school because of the fact that they cannot fully understand it in terms of an intrinsic syntax, is educationally inexcusable in so far as cognition always takes place, but only the conventional labels (which are unfortunately often seen as *the* only correct ones) are still missing.

The maps visualize the paths and connections which are actually activated. Furthermore, the maps can easily be grouped into different types of representation. The fact of the stated inefficiency of traditional music teaching in (European?) schools calls for consequences. What does it mean to students to learn music theory by heart without understanding, i. e. without a mental representation of the phenomena, which are not related to the learned terms. Symbols without meaning, labels without reference are nonsense and a useless waste of time. If educators decide to teach music they have to take in consideration that they must offer the opportunity to develop musical representations. Whatever musical phenomenon we label with theoretical terms (“major third”, “tonic chord”, “two quarter notes and a rest”, “rondo” or “fugue” etc.), at first we have to take care that students will develop figural representations of these musical units. Therefore, I would like to point out some crucial aspects.

1. If figural representations is the prerequisite for formal representation, then the school has to provide students with opportunities and tools to deal with music practically.

2. The less children are experienced in music, the more we should emphasize figural representations.

3. We should start with experiences, cognitions, and meanings students always have. Descriptions and reactions on the associative level are not of less value or wrong, they only refer to an earlier stage of representation. We always have to start with the actual status of representation. Children focus their attention on different features. Learning also is an introduction into

the way we see things (e. g. what adults call same or different). But in a learning process we should students allow to start with observations in their tongue and terminology. When we know that they have developed figural or associative representations, that means, that they perceive meanings, a correct verbal term can easily be taught. But we should never teach labels or terms, but music. Teaching then is the support to develop figural and formal musical representations.

4. Learning is dependent on changes in the cognitive maps and mental representations. Learning takes place when students develop representations that can be activated, and expand and differentiate cognitive maps they make use of. This leads to “multiple hearings” which enriches musical understanding.

To understand better what takes place and is actually activated in the process of hearing can lead us to a concrete learning theory which should offer methods and strategies of how to change, differentiate or transform mental representation. Learning in general is no longer only a matter of change of behavior or the result of an increasing memory, rather than a modification or differentiation within the network of the cognitive map. If we look at the student’s maps of perception seriously we will become a little bit more reluctant to rank students’ response to music. A metaphorical or figural description is not worse or of less quality than a more formal one, it only refers to a different stage of a musical representation. To take into consideration this fundamental point may change our thinking about learning and ought to be a guide of our educational philosophy.

Summary

Musical perception and cognition proceeds in paths which are represented by a neural network. The theory is based upon a connectionist approach. Understanding therefore can be described as an activation of what is mentally represented. This representation is seen as a complex, self-organized, and distributed network. The paper deals with an ongoing research project which is focused on musical representation. Its structure is shown by a “map of perception” gained by means of a listening story which mirrors the activation of the already developed representation in its figural or formal types. Learning and understanding now will be seen as the process of how one establishes representations and can be defined as the status of development and differentiation within cognitive maps.

References

- Babler, Roman (1993): *Sprachliche Repräsentation komplexer Musik bei Schülern*. Wiss. Hausarbeit im Rahmen des Staatsexamens für das Lehramt an Gymnasien, Musikhochschule Freiburg.
- Bamberger, Jeanne (1982): *Revisiting Children's Drawings of Simple Rhythms: A Function for Reflection-in-Action*. In: U-shaped Behavioral Growth, ed. by Sidney Strauss, New York: Academic Press, pp 191–226.
- Bamberger, Jeanne (1991): *The Mind behind the Musical Ear. How Children Develop Musical Intelligence*. Cambridge MA: Harvard University Press.
- Bharucha, J. J. & Olney, K. L. (1989): *Tonal cognition, artificial intelligence, and neural nets*. In: Contemporary Music Review. Music and Cognitive Science, 4 (1989), p. 341–356.
- Bharucha, Jamshed J. (1987): *Music Cognition and Perceptual Facilitation: A Connectionist Framework*. In: Music Perception 6 (1987), p. 1–30
- Boden, Margaret A. (1990): *The Creative Mind: Myths and Mechanisms*. London: Weidenfeld and Nicolson
- Cummins, Robert (1989): *Meaning and Mental Representation*. Cambridge, MA: MIT Press
- Davidson, Lyle & Scripp, Lawrence (1988): *Young children's musical representations: windows on music cognition*. In: John A. Sloboda (Ed.): Generative Processes in Music, Oxford: Clarendon Press, p. 195–230.
- Falk, Susanne (1992): *Kognitive Aktivierungsprozesse bei der Wahrnehmung von Musik*. Wiss. Hausarbeit im Rahmen des Staatsexamens für das Lehramt an Gymnasien, Musikhochschule Freiburg.
- Feldman, Jerome A. (1989): *Neural Representation of Conceptual Knowledge*. In: Models of Cognition. A Review of Cognitive Science, ed. by E. Sharkey, Norwood.
- Fodor, J. & Pylyshyn, Z. W. (1988): *Connectionism and Cognitive Architecture: A Critical Analysis*, in: Cognition 28 (1988), p. 3–71.
- Gardner, Howard (1991): *The Unschooled Mind*. New York: Basic Books, dt. *Der ungeschulte Kopf*, Stuttgart 1993
- Gruhn, Wilfried (1992): *Wahrnehmen und Verstehen. Kognitive Grundlagen der Repräsentation musikalischer Elemente und Strukturen. Entwurf zu einem Forschungsprogramm*. In: H. J. Kaiser (Hg.): Musikalische Erfahrung: Wahrnehmen, Erkennen, Aneignen (Musikpädagogische Forschung, Bd. 13), Essen 1992, S. 44–51.
- Gruhn, Wilfried (1993): *Strukturen musikalischer Wahrnehmung*. In: Musik in der Schule, 1993, H 2, S. 75–80, 89.
- Gruhn, Wilfried: *Hermeneutik und Psychologie. Erkennen, Denken, Verstehen in neuronalen Netzen*, Tagungsbericht Salzburg 1992 (i. Dr.).
- Gruhn, Wilfried: *Musiklernen. Der Aufbau musikalischer Repräsentationen*. In: Musikpädagogische Forschung, Bd. 15 (i. Dr.).
- Hanson, Stephen José & Burr, David J. (1990): *What connectionist models learn: Learning and representation in connectionist networks*. In: Behavioral and Brain Sciences 13, p. 471–518.
- Hebb, Donald (1949): *The Organization of Behavior*. New York: Wiley
- Jackendoff, Ray (1992): *Languages of the Mind. Essays on Mental Representation*. Cambridge MA: MIT Press.
- Johnson-Laird, Philip Nicholas (1983): *Mental Models. Towards a Cognitive Science of Language, Inference, and Consciousness*. Cambridge MA: Cambridge University Press.
- Johnson-Laird, Philip Nicholas (1988): *The Computer and the Mind*. Cambridge MA: Harvard University Press
- Kroll, Neal E. A. & Klimesch, Wolfgang (1992): *Semantic memory: Complexity or connectivity?* In: Memory and Cognition 20, p. 192–210.
- Longuet-Higgins, H. Christopher (1987): *Studies in Cognitive Science*. Cambridge MA: MIT Press.
- Nebel, Sieglinde (1992): *Aufbau und Veränderung mentaler Repräsentationen von Musikstücken bei Kindern*. Wiss. Hausarbeit im Rahmen des Staatsexamens für das Lehramt an Gymnasien, Musikhochschule Freiburg.
- Posner, Michael (ed.) (1989): *Foundations of Cognitive Science*. Cambridge MA: MIT Press

- Richter, Christoph (1991): *Erleben und verstehen, was Hören ist*. In: Musik und Unterricht 7(1991), S. 39–46.
- Rumelhart, David E. (1989): *The Architecture of Mind: A Connectionist Approach*. In: M.Posner (ed.): Foundations of Cognitive Science, Cambridge MA: MIT Press, pp. 133–159

Example 1

The visit

A listening drama in three acts

(*scenario*)

according to an idea of Christoph Richter

I

Palace of king Audianthropos. A musical being comes to the porch and wants to get in. Well trained doorkeepers and receptionists instantly inspect its appearance (how old the musical being is, where it comes from, how it looks [sounds] like etc.) and then decide if they want the being to come in. Finally, the musical being reaches the large auditory hall.

II

Auditorium, where lots of different musical beings have already been assembled. Welcome and introduction of the new, unknown music. In this room one can find other beings like images, recollections, dreams, tales, ideas, critical thoughts and gags. The entrance of the new guest causes confusion and excitement. Where is that music coming from? How familiar is it? What is going on with it now? What is its purpose? Some of the inhabitants are attracted by its strange and unknown behavior, some others refuse it just because of this. Some want to integrate the new being by playing with it. All of them are discussing their own attitudes and relations to that new musical being.

III

In the meantime, the new musical being has made friends with some others who have accepted it as a guest. It is asked about its origins and talks about experiences. Finally, they decide to undertake something commonly. I don't know what it was, and I don't know either how they behaved against the guest in the course of the following time, or if they became accustomed with

it or not. But this is just a scaffolding of a story, not the story itself. But, you will now meet a real piece of music that can be seen as such an musical being. And then you are asked to enrich this scaffolding with blood and flesh of your actual experience while listening intensively to this music reaching the porch of Audianthropos...

Appendix

Story 1

Act I: Once a guest reached the castle of Audianthropos and asked instantly with a shrill voice to let him in. I would never have let in such a noisy person if he had not presented a permission by an authority to open the door. But in the meantime, while he was waiting in the porch, he raised my curiosity because of his steadily changing shape. Immediately, the receptionists began to gather information about this strange being. "Where are you from?" But it was difficult to understand his ambiguous expressions. One time he was gay and excited and sounded like a dance or triumphal march, then he talked slowly and quiet and seemed depressed. It was impossible to find out his age as well. He seemed to be young, but at the same time he looked old, traditional, conservative. I have never seen such a diverse being before. For this, my receptionist could make neither head nor tail of it. This person looked like an actor who immediately could switch from the role of a beggar into the role of a king.

Act II: When arriving at the auditorium this musical being raised a tremendous confusion under the concerts, operas, jazz pieces. Especially the oldest of them refused the newcomer because he seemed to deride them. For the younger ones he sometimes seemed to be interesting and fashionable, but all of a sudden he turned into an old-fashioned manner. What to do with this person, who whirled around the established people?

(female, age 17, Gymnasium)

Story 2

Act I: The normal lives in the palace of Audianthropos are interrupted by the advent of a strange musical being what is never heard and seen before. This provokes an attentive curiosity because the new being looks rather

extraordinary with respect to its outer appearance. Therefore, it is observed and examined suspiciously. By this it is found that the being itself or relatives of it must have visited the palace in earlier times.

Act II: The assembly in the main hall has got the message that there will arrive a guest who was here once before. Some of the inhabitants recognize him as an old friend who had visited the palace before, but is now dressed newly in a fashionable shape. This makes it difficult for others to remember where and when they had met him first, and where he is coming from. But he is very self-confident. When he enters the hall he calls: "Look, that's me! Let us see what we can arrange for the future."

Act III: The inhabitants of the auditory hall become acquainted with the musical being very soon. Despite of its adversary properties it is accepted and integrated. Finally they celebrate a big party in honor of this free and independent fellow.

(male, student; Academy of Music)

Story 3

This music doesn't remind me of a king or a palace. For me the entire action takes place in the open air on occasion of a hunting or a journey.

There is a king who rides a horse; along with him there is his son followed by several servants. It is a fox-hunting. They gallop. While listening to the music I can imagine the movement of the horses, how they run, how the horseshoes press their footprints into the earth. It is hot, summer. Now they see the fox. They pursue it, and all of a sudden it becomes cold and misty and creepy. The servants have disappeared. They are quite alone – the father and his son. They did never get on very well with each other, but now they really do need one another. Water is ice-cold, trees have lost their leaves, earth is wet, everywhere is mud. The son sees a light and rides into that direction. His father calls for him, but he doesn't answer. He would like to see him drowned. But instantly he feels pain. He has reached the end of the path where it opens to a lovely meadow. He looks back into the dangerous darkness; he feels anxious, and now he wants to help his father. Both are now saved.

Comment: I have imagined this because the beginning is very calm, joyous and relaxed. Then a strong and heavy sound appears, but in the end the music is like a triumph of love!

(female, age 15, Gymnasium)

Story 4

It knocked at the door, the being got in. At first it seemed to be shy, but this should change rapidly. The being crawled through the aisles of my palace in a manner that let me expect something curious. The longer I watched at (listened to) this musical being the more I became aware that this shy attitude covers a hidden fervent temper.

When the musical being entered the auditorium one could experience its actual character. I was struck by the first sound which seemed a little bit familiar to me, but the sound-character was always very variable.

Because I am still a young and rather unexperienced king, I did not know exactly what was meant by this being. It seemed to hint at human life in general. I recognized that the ups and downs in the melody could indicate the heights and depths of human life. While listening I let my thoughts travel, and I noticed how fast this curious being gained more and more self-confidence and became louder and louder. When it had reached the auditorium it showed a promising mezzoforte.

I really was wondering how fast this being could change its mood and tonality. It always seesawed between minor and major. For this it came into my mind that the music would tell a story of life, probably of my personal life, clad with music. The ups and downs did really remind me of events in my own life – good ones and bad ones. That is what happens in life: one stands on the top of his luck, and the next step may throw one down into an abyss of sadness.

(male, age 17, Gymnasium)

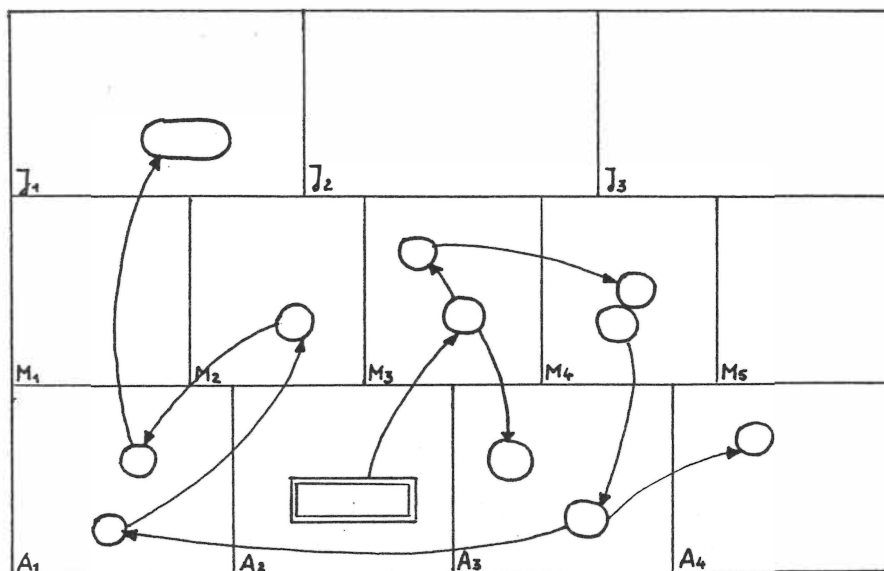


Fig. 1: Topographic structure of a map of perception

In this map the three levels (A, M, J) are divided into several zones (A₁₋₄; M₁₋₅; J₁₋₃):

A Associations

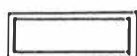
A₁ = sensation; A₂ = imagination; A₃ = movement; A₄ = action

M Musical cognitions

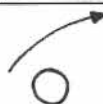
M₁ = genre; M₂ = form; M₃ = character, M₄ = instrumental complement; M₅ = structural elements

J Judgements

J₁ = judgement as to taste [Geschmacks-Urteil]; J₂ = judgement as to value [Wert-Urteil]; J₃ = objective statement [Sach-Urteil]



primary activation



conduction of stimuli



node