

Towards a Cognitive Music Aesthetics

Ludger Hofmann-Engl

Department of Music, Coulsdon College, UK
Ludger.Hofmann@coulsdon.ac.uk

ABSTRACT

This paper introduces the concept of cognitive categories as to be found within different music aesthetical approaches. Additionally, it claims that isomorph cognitive categories can be found in other areas of human activity such as philosophy, mathematics and politics. In order to demonstrate the validity of this approach the concept of cognitive categories has been applied to different time periods of the Western Civilization commencing with the medieval ages and leading up to the avant-garde. The paper does not claim to be comprehensive but to open up an area for research which has received little attention so far.

I. INTRODUCTION

While still studying at the department of music, which no longer exists, at TU Berlin under Dahlhaus and de la Motte-Haber, the author came across a fascinating idea as presented within the works by Blaukopf (1984) who formulated the hypothesis that the interest in symmetries in music within the Baroque area in form of sequences, transpositions, inversions and retrogrades was a general principle of this time period, and, which could also be found in architecture, landscaping, the fine arts and other human endeavors whereby complexity was believed to be composed of simple symmetrical elements. While Blaukopf did not provide sufficient evidence to back-up such a hypothesis, it seemed intuitively not unfounded.

Although it might have seem to be more appropriate to investigate this hypothesis by Blaukopf in detail, the author found the question whether this concept, which appears intuitively plausible, could be applied to other time periods within Western history. Now, in order to start working on providing detailed evidence on whether such a hypothesis ought to be accepted or rejected, the author felt that it would be paramount to establish a conceptual framework within we may investigate such a hypothesis, and this is the exact purpose of this paper. While the main section of this paper is concerned with issues relating to such a conceptual framework, the final section before the conclusion, follows Blaukopf's approach by making largely claims which seem intuitively plausible by providing only enough evidence to underpin the plausibility of the hypothesis just as an initial test to see whether the conceptual framework appears to be workable.

II. COGNITIVE AESTHETICS

To the knowledge of the author, the discipline which may be coined *Cognitive Aesthetics* is at best in its infancy. Although Radman (2001) produced a paper entitled: "The Art of the Mind: Towards Cognitive Aesthetics", the term itself seems to have not found wider recognition within the subsequent 10 years. Here, Stockwell's book entitled "Texture – a Cognitive Aesthetics of Reading" (2009) and de Klerk's &

Lubbe's (2004) contribution in the context of apparel quality evaluations are part of the few exceptions. Interestingly, while Radman refers to cognitive aesthetics as the active artistry of the mind when processing information, not dissimilar to Searle's concept of *Intentionality*, Stockwell uses the term in a more linguistic sense while de Klerk & Lubbe refer to the aesthetic aspects of apparel objects in terms of symbolic quality.

For the purpose of this paper, the author decided to return to the base concept of aesthetics as introduced by Baumgarten (1750) and modified by Kant (1790). While, according to Dahlhaus (1967), Baumgarten developed the concept of an aesthetics as a lower faculty *cognitio* in response to Leibniz's and Wolff's understanding of sensual information as simply a means of forming cognition and not cognition itself, Kant, accepting this new concept, attempted to state the nature of aesthetic judgments summarized in his famous statement: "Schön ist das, was ohne Begriff allgemein gefällt." (The *beautiful* is that which, apart from a concept, pleases universally.) What is interesting, when returning to the base concept of aesthetics, is, that a certain concept of cognition is already integral part of such an aesthetics. Now, merging this base concept with a base concept of cognitive psychology as for instance present in the work of Beck (1991), we are willing to reject Radman's (2001) approach and to opt for the approach as taken by de Klerk's & Lubbe's (2004), who understand cognitive aesthetics in the context of apparel quality as the thoughts of the consumer centered around concepts of reality, fantasy and entertainment (e.g. "if I buy this coat, I will look like a cowboy/girl" or "if I wear those trousers, I will look fat"). Thus, we will understand cognitive aesthetics as the inquiry into aesthetic aspects involving thoughts and thought concepts as well as thought categories.

III. ISSUES IN CONTEMPORARY MUSIC AESTHETICS

It appears to the author that contemporary music aesthetics are centered around the two question: "What are the features which makes music to be liked", and: "What are the emotional features and responses which are evoked by music".

In regards to the first question, it seems that focus has been on the issue of familiarity and complexity. Perhaps most intriguing in relation to preferences is the study by Soley & Hannon (2010) who found that US infants prefer regular meter, while Turkish infants show no such preference. On the other hand McDermott (2012) makes the point that foreign music has been used as a means to induce interrogation willingness of suspects, although it stands to reason that the loudness level may be another, perhaps more significant, factor. The effect of increased liking of music due to repeated exposure has been observed by a number of researchers (e.g. Mull, 1957 and Heingartner & Hall, 1974). Complexity on the

other hand, appears to be non-linearly correlated to liking. Here, according to Berlyne (1971), the aesthetic value (liking) of music follows an inverted U-curve (Fig. 1).

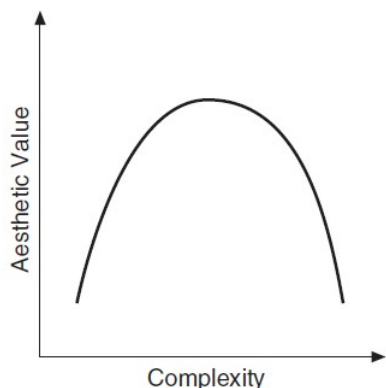


Figure 1. The U-curve correlation between complexity of music and liking (aesthetic value)

In the case that music lacks sufficient complexity it will be perceived as uninteresting just as much as music, which displays a level of complexity, which renders the music unintelligible. Although, this concept seems plausible it does not come without problems. In particular it seems essential to replace this U-curve by a Gauss curve as shown in figure 2.

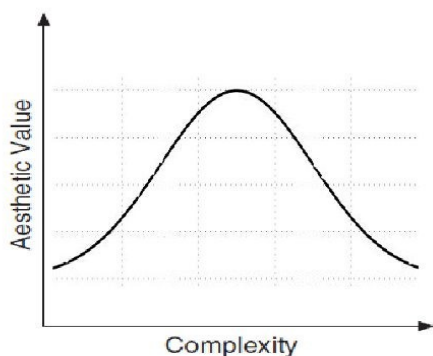


Figure 2: Correlating aesthetic value to a Gauss curve

In relation to the emotional features of music, the author considers three aspects within recent years to be of particular interest. Firstly, we have Fritz et al (2009) who demonstrated that the three emotions *happy*, *sad* and *scared* are universally and cross-culturally recognized in music. Secondly, there are the observations by Schubert (2007 & 2010) who found that listeners generally prefer emotion-inducing music and music which succeeds in inducing the emotion which it intends to induce. Finally, we have a number of studies in the area of mood regulation (e.g. Knobloch & Zilman, 2002 and Chen, Zhou & Bryant, 2007) which examine how music is used to regulate listeners' emotions (e.g. listening to sad music when being sad).

Still, to the knowledge of the author, no single study exists in the context of music which, as stated in section 2, could be defined as an “inquiry into aesthetic aspects involving thoughts and thought concepts as well as thought categories”.

IV. ISOMORPHISMS

In order to understand the concept of isomorphisms in the context of this paper, it might be useful to refer to the definition as existent within the area of the theory of categories generally written as:

$$f: X \rightarrow Y \text{ for which there exists an } f^{-1}: Y \rightarrow X \\ \text{with } f^{-1} * f = id_X \text{ and } f * f^{-1} = id_Y$$

where f and f^{-1} are morphisms, X and Y objects of a category and id_x and id_y identity morphism

Applying this concept to two algebraic structures such as the multiplicative group $(M_1, *)$ and the additive group $(M_2, +)$ we find that both are isomorph under the function \ln within the set of \mathbb{R}_+ , as we can write:

$$\ln(xy) = \ln(x) + \ln(y)$$

In order to illustrate the concept of isomorphism, we may consider the following three graphical objects:

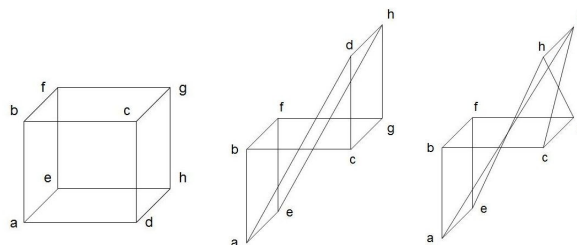


Figure 3: Object A (grid in shape of a cuboid), object B (pulled cuboid grid) and object C (pulled and twisted cuboid grid)

Here, we can see three objects A , B and C with three distinct shapes, while the relative positions of the grid points has not changed which allows us to say that the three objects are isomorph in relation to their grid points.

Now, while the definition of isomorphisms within mathematics is well defined, we cannot expect that the same rigor will be possible if we wish to apply the same concept within the area of aesthetics. Interestingly, the three objects above posses an intuitive quality to shed light on this issue. Let us assume that object A represents a piece of music M_1 , object B the piece M_2 and object C the piece M_3 , we now can observe their different “shapes”, where the grids represent structural features (e.g. a sonata form or pitch distribution), and we can conclude that M_1 , M_2 and M_3 are isomorph under those structural features and that those structural features are elements within a cognitive music aesthetics. While this understanding seems appropriate for now, we will generalize it further later on.

V. CATEGORIZATION

Categorization has been of significant importance within the field of cognitive science for several decades centered around issues such as innate versus learned categories - with Noam Chomsky as a famous proponent of the first approach (almost alone against the rest of the world) -, integral versus separable categories (e.g. Garner, 1974), categorical

perception (e.g. Berlin & Kay, 1969) and the interrelationship between similarity and categorization (e.g. Nosofsky, 1986) which has resulted in the formulation of mathematical models within recent years (e.g. Heller, Sanborn & Chater, 2009). Although these issues are clearly of importance, the focus of these paper will be on a different level for which we will introduce an illustration via the example below.

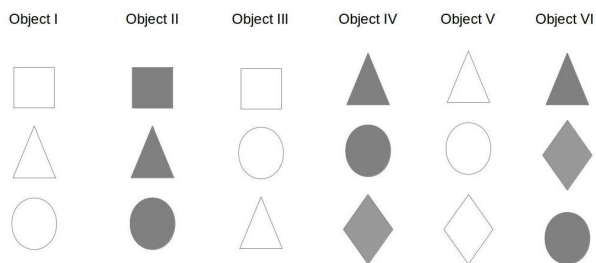


Figure 4: 6 objects consisting each of three vertically arranged elements

We now apply three categorization strategies in order to categorize these six objects. The strategies are a) color, b) elements and c) order of elements. Using strategy a), we find that object I, III and V belong to one category and the objects II, IV and VI to another category. Following strategy b), we find that objects I, II and III belong to one category and objects IV, V and VI to another, and, finally, applying strategy c), object I and II belong to one category, object III to another, objects IV and V to a third category and object VI yet to another.

These example may help to demonstrate that the way we “look at the world” can produce very different results. In relation to a cognitive aesthetics, we are not interested in the categories themselves, but in the cognitive strategies which produce these categories. We will call these cognitive strategies from now on cognitive categories.

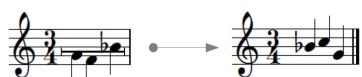
VI. COGNITIVE MUSIC AESTHETICS

In order to illustrate what we will consider to be a cognitive category within a cognitive music aesthetics, we consider the following melodic transformations, which Hofmann-Engl (2009) has coined classic melotonic transformations. These are: Transposition, inversion and retrograde. However, unlike Hofmann-Engl, we will not investigate the invariance nor the algebraic structure of these transformations, but look at their geometric properties instead.

The opening three notes of Mussorgsky's promenade are:



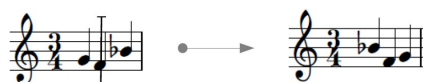
Reflecting this incipit along a line through the “g#/a-space”, we obtain:



which is the 3rd to 5th measure in bar 4 and which is the inversion of the incipit. Reflecting now this inversion along a line through the “g/g#-space”, we obtain:



which is measure 1 to 3 of bar 9 of the 2nd promenade and the transposition of the incipit. Further, reflecting the incipit along a vertical line through “g”, we obtain:



which is the transposition of the retrograde of the 2nd and 3rd measure of bar 15 of the 1st promenade. The inversion of a retrograde would require yet another reflection via a horizontal line although the author did not detected an exact inversion retrograde within Mussorgsky's promenades.

Returning to the question of what we will understand when referring to cognitive categories, we are not as such interested in the classical melotonic transformations but in the strategies which can generate these categories, and these are geometric reflections via horizontal and vertical lines. Undoubtedly, the classic melotonic transformations are an integral part of a Baroque aesthetics which then itself might help to explain the Baroque character of Mussorgsky's promenades.

The author believes that this demonstration by example is sufficient for the purpose of this paper.

VII. APPLIED MUSIC AESTHETICS

As indicated within the introduction, this section is concerned with the question of whether the framework as developed above will be adequate when put to its test. Although this test will not be comprehensive the author believes it will be sufficient to lend support to the plausibility of our conceptual framework. We will describe the test procedure as follows below.

By either means of deduction or induction we will establish a cognitive category within the context of a cognitive music aesthetics as applied to the chronology of Western history. We further will make some attempts to compare these cognitive categories to cognitive categories in other areas of human endeavors up to a point where we can find that isomorphisms exist between the field of music aesthetics and other areas such as the fine arts, philosophy, science or politics.

It is clear that, even if the author had wished to do so, this section is by no means comprehensive. At the same time, this deficiency may be viewed in a more positive light if we consider it to be just a small starting point for further investigations.

A. Medieval Age

Our knowledge about the music from the medieval ages is limited by the fact that music notation was just in the process of being developed with the neumes (around 900 C.E.) only slowly being replaced by the staff notation as introduced by Guido de Arezzo (around 1000 C.E.) which means that particularly the early medieval ages are not directly accessible to us. However, we have two sources which might give us

some insight into the cognitive music aesthetics of the time, and this is Augustinus de Hippo (c. 385 C.E.) and Boetius (c. 491 C.E.). Following neoplatonic thinking, Augustinus is greatly concerned with the moral affect music may or may not have. Clearly, only music which will enhance piety can, according to him, be accepted, which means that instrumental music is rejected ad absolutum. Interestingly, Boetius delivers another blow to the practice of music, by degrading the practical musician below the status of the music theorist, an attitude which has prevailed for much of the later medieval ages and may have found a place in the works of Adorno. If we further take the observations by Hawkins (1875) into account about the persisting concerns of the papal authorities on Gregorian chant being corrupted and the need to return to its pure form, we get a picture of a music aesthetics which is driven by rigor and an obsessive thinking about being morally and spiritually correct. Now, without providing details, just considering what kind of cognition may have encouraged the minds of this time period to go on crusades and execute inquisitions, it stands to reason that the cognitive category which forms the basis to a music aesthetics has produced an isomorph structure of political thinking within this time period.

B. Renaissance

There is little agreement on the exact boundaries of this time period. Therefore, the author decided to consider key contributions made around 1400 C.E. with a span of ca +/- 150 years. Undoubtedly, the emergence of ars nova with Philipp de Vitry (1322) as one of its most influential proponents, without which polyphonic composers such as Dufay and Machaut would have been inconceivable, should be considered a fundamental musical element of this period. Clearly outside the given time frame as proposed above is the mathematician Leonardo da Pisa (Fibonacci) with his *liber abaci* (1202) which effected the replacement of the Roman numeral system by the Hindu-Arabic numeral system and without which all future history would not have been possible. Hence, we place Leonardo da Pisa intellectually within the Renaissance period. Further, the contribution to literature made by Dante's *Divina Commedia* (1321) will have to be considered a central element of the Renaissance. Then, the introduction of the perspective within the fine arts with Albrecht Dürer (1528) as a popular proponent too must be viewed as a major contribution to this time period, and finally, the treaty on architecture by Giacomo Barozzi da Vignola (1562) should be considered a key element to the Renaissance as well. It is important to remember that this short list is not intended to be comprehensive but it seems unquestionable that a comprehensive list will at least have to contain the names as listed above.

Perhaps most striking are the efforts of Giacomo Barozzi da Vignola in his treaty on architecture (1593). As pointed out by Vera (2009), Giacomo Barozzi da Vignola endeavors to describe the construction and proportions of columns in the same manner as his contemporaries treated the proportions on a monochord as illustrated in the figures below:

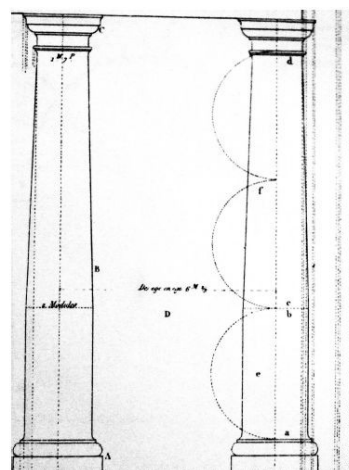


Figure 5a: Tuscan column according to Giacomo Barozzi da Vignola

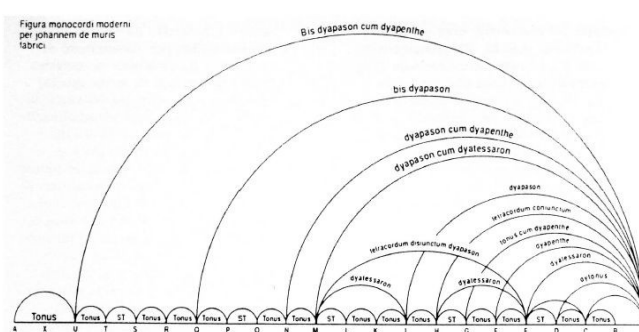


Figure 5b: Divisions on a monochord according to Johannes Muris.

However, in relation to a cognitive music aesthetics, the observations by Powell (1979) and Sandresky (1981), who demonstrated that proportions such as the golden section and the Fibonacci sequence are construction principles within the works of Dufay and Machaut, are perhaps more relevant. Similarly, the division of Dante's *Divina Commedia* into 33 *cantos* is constructed along principles of strict proportionality which, of course, is true too for the principles of perspective. Hence, we accept the working hypothesis that the cognitive music aesthetics of this time period is based on proportionality and that it is isomorph to the cognitive categories as found in music theory, architecture, the fine arts, literature and mathematics.

C. Baroque Period

Within this section we will principally follow the argument as put forward by Blaukopf (1984). While we might accept the hypothesis, as given above, that the Renaissance period is preoccupied with proportionality, Blaukopf puts forward the argument that symmetries and symmetry transformations are fundamental to the thinking of this time period.

As observed by Henle (1996), the discovery of what was to be called analytical geometry by Descartes (1637) and Fermat (1637) are key to the development of mathematics within Baroque. Interestingly, analytical geometry enables us to describe geometrical symmetries in algebraic terms which relates well to the hypothesis as made by Blaukopf.

While we deliberately used a non-baroque example under paragraph 6 when illustrating the inversion, retrograde and transposition in terms of symmetry reflection, it is common knowledge that these melotonic transformations are essential construction categories of the *Fugue* which itself may be considered to be the most important compositional form of this time period. So the question is whether we can find this cognitive category in other areas of human endeavor within Baroque. Blaukopf refers, without giving an example, to landscaping and architecture. Here, the author considers the ground-plan for *Palazzo Doria di Genoa* in 1530 in relation to landscaping and for architecture the ground-plan for *Chiesa del Gesù di Roma* which had commenced under Giacomo Barozzi da Vignola in 1568 to be good examples which are illustrated below.

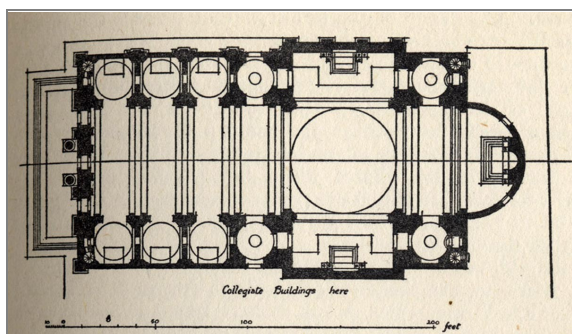


Figure 6a: Ground-plan for *Palazzo Doria di Genoa*

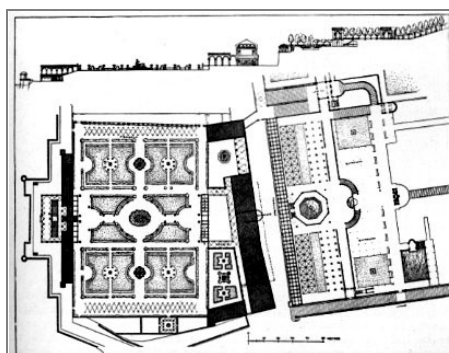


Figure 6b: Ground-plan for *Chiesa del Gesù di Roma*

We conclude this section by confirming that there appears to be evidence that a thinking in symmetries as a cognitive category can be found within a music aesthetics of this time period as well as in mathematics, landscaping and architecture.

D. Classical Period

While the medieval ages stretch over several centuries, the Renaissance over perhaps two centuries, the Baroque over perhaps only one century, the classical period appears to not even stretch over one single century. This narrowing time span seems strange as it either implies arbitrariness or the claim that social processes were increasingly speeding up. While the truth might be a combination of both, the author finds it more appropriate to hypothetically look at a cognitive category which can be considered to be the defining cognitive category

of the classical time period and this is the category of opposites.

Newton (1687) may be considered the mind who revolutionized mechanics by introducing his three laws of motion. For the purpose of this paper we trivialize the issue by stating that an object will remain static if force and counter-force are at equilibrium as shown in the example below:

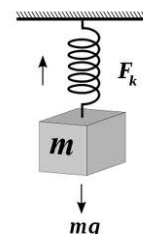


Figure 7: The object with the mass m will remain static if $mg = F_k$ where mg is the gravitational force and F_k the restoring force.

Applying an additional force by, for instance, pulling the object with mass m will result in motion. This is, when force and counter-force are not at equilibrium. We consider this to be a central cognitive category of classical physics. Now, in the first instance, we might wish to know if an isomorph cognitive category exists within music aesthetics of this time period. For this purpose we look at what has become known to be the *Sonata Form*.

Generally speaking, the sonata form consists of three parts: The exposition, the elaboration and the reprise. Now, the exposition consists of two themes which are in different keys. During the elaboration the composer works on those two themes by means of variation, augmentation and fusion. The reprise then repeats the two themes but this time in the same key. Describing the sonata form in terms of force and counter-force, we can say: Two initial themes in different keys are not at equilibrium (exposition) which leads to motion (elaboration) which finally leads to an equilibrium of both themes being in the same key (reprise). Considering the fact that the sonata form is fundamental to classical music, we have good reason to say that classical music and classical mechanics are isomorph via the category of force and counter-force. So the next question may be to inquire if the same cognitive category can be found in other areas of human endeavor of the classical period.

Hegel's *Phenomenologie* (1807) displays a surprising closeness to the cognitive category of force and counter-force in the realm of philosophy and the philosophy of history. Here, Hegel proposes that a thesis is put into motion through an anti-thesis which ultimately results in a synthesis. This synthesis itself turns into a thesis and is put into motion through a new anti-thesis. Further, in the realm of literature, we have the classical work *Faust* (1806 to 1832) by Goethe where not only the two parts appear as thesis and anti-thesis but much of the play in part one is driven by force and counter-force such as *good* and *evil*, *knowledge* and *ignorance* and *lust* and *decency*.

We will conclude this section with the observation that what can be considered to be classical thinking as reflected within a cognitive music aesthetics stretches somewhat from elements within Baroque to elements within the Romantic time

period and that a classification of the classical time period via a time span seems unhelpful at the very least.

E. Romantic Period

While we encountered the question of how to demarcate earlier time periods, we are now faced with a geographical demarcation as well, as, strictly speaking, the Romantic Period appears to be a German or even more strictly a north-eastern German phenomenon. However, for the purpose of this paper we look at the Romantic in the context of cognitive categories as a development which followed the classic time period. Additionally, we refrain from subdividing such a time period into smaller units as done within the fine arts into impressionism, pointillism, expressionism and so on. In fact, we will follow Henle's approach (1996) by questioning what we might be able to call a romantic period in mathematics.

Henle (1996) mentions two developments within the mathematics of the 19th century which he considers to be crucial. These are the development of a theory of infinite numbers by Georg Cantor and the realization that a number of mathematical problems, such as the independence of Euclid's 5th axiom, had been shown to be unsolvable. Particularly, Georg Cantor's proof (1874) that, while both positive integers and real numbers are infinite, the set of real numbers is larger than the set of integers, must have been quite bewildering to a 19th century audience. When mathematics seemed so orderly and clear in the past this no longer is the case. Perhaps this loss of certainty may have influenced Galton to develop the foundations for correlation and regression analysis around 1888 (compare Bulmer, 2003). Where the belief in causality is shattered, statistics seems to be the only possible answer.

The isomorphism within music aesthetics to this new situation can be expected to express itself as a distrust in existing forms and regulations, which we could describe as a disintegration of thought when looked at it under a negative perspective and as a liberation when looked at it more favorably. The fact, that this is the case can be seen in the disintegration of the sonata form, in the increased use of free forms such as the *fantasy*, in melodies which no longer follow the period principle, in compositions which no longer end on the tonic, in a chromaticism which frequently destabilizes the harmonic framework of the composition and in the abandonment of bar notation for which "Der Dichter spricht" by Schumann (1839) the section after bar 11 may serve as a good example:



Figure 8: Section after bar 11 from "Der Dichter spricht" by Schumann

This sort of disintegration of thought may also be found in *Phantasus* by Holz (1898), the second law of thermodynamics (around 1830) and the paintings by Van Gogh like the "Two peasant woman digging in a field with snow" (1890) as illustrated below:



Figure 9: Two peasant woman digging in a field with snow by Van Gogh from 1890

While we acknowledge that a variety of cognitive categories can be found within the 19th century, the author hopes to have provided evidence that we can call the disintegration of thought a central cognitive category of the Romantic period.

F. 20th Century

It is tempting to open this section in a dialectical fashion. This is, while we might understand the Romantic period as the anti-thesis to the Classical period, we might wish to view the time around the middle of the 20th century as the the anti-thesis to the Romantic period or the synthesis to both, the Classical and Romantic period. For the purpose of this claim, we will remain within the realm of 20th century composing only.

While composers such as Reger, Vaughan Williams and Sibelius continued to work within a Romantic music aesthetics, other composers such as Bartók, Hindemith and Schoenberg did not. But what did these three composers have in common and what was their response in relation to a cognitive music aesthetics? In order to answer this question we will briefly look at what these three composers did and then return to these questions again.

We might argue that Bartók's response to the disintegration of thought can be identified in his efforts as undertaken in the area of ethnomusicology (e.g. Bartók, 1924) which clearly influenced his compositional style and in particular the formation of melodic material such as the second movement of Bartók's violin sonata No 1 (1921) or his *Eight Improvisations on Hungarian Peasant Songs* (1920). We might call this cognitive music aesthetics the attempt to return to the roots.

Schoenberg on the other hand appears to respond to the disintegration of thought in a different manner with the introduction of twelve tone technique as described in his works (Schoenberg, 1941 & 1948). In this case an old eroded tonal system is being replaced by a rigid and formal system. Interestingly, Schoenberg seems to feel the need to justify his new methods by referring to more classical compositional tools (Schoenberg, 1967). While Schoenberg's system was widely used and modified within the next three decades, it is no longer part of the main stream corpus of musical composition.

A third approach was taken by Hindemith (1937). Principally, Hindemith attempted to establish a psychoacoustic

foundation for a contemporary music theory in response to the disintegration of thought. However, Hindemith's shortcomings were quickly pointed out by his contemporaries and in particular by Cazden (1954). Hindemith's base ideas might have lived on in concepts of virtual pitch, but his own theory never took off.

We conclude this section by returning to our question above. It seems clear that some dissatisfaction with the situation as found in the post-romantic period has led composers to form three aesthetic responses which we could call: a) Returning to the roots, b) formulation of formalistic systems and c) a psychoacoustic foundation. While the second approach is a clear dead end, it is perhaps too early to make further, more authoritative statements.

G. 20th Avant-garde

While, as stated above, it may be too early to make more definite statements about the 20th century, the situation is certainly not any better if we approach the avant-garde because it is not even clear who and what ideas are part of this avant-garde. Hence, we will approach the issue from yet a different angle again and this is, to look at some major sociopolitical and technological developments within the last 30 years or so.

To a political observer it might be apparent that, although we still live in a world with a great variety of political systems, politically opposing and conflicting ideas and political tensions, which at times erupt into open conflicts, the last few decades have seen an unprecedented democratization process with the dissolution of the Soviet Union as a key element and the *Arab Spring* as one of the most recent developments. A second equally important factor can be seen in the increased involvement of the *UN* in international affairs and its peacekeeping functions. A trend towards global pacification too seems to be in process.

Although the *Gini* coefficient indicates that the gap between rich and poor has been increasing in a number of countries including the *USA*, *UK* and *China* since the end of world war II, absolute poverty seems, according to the *World Bank*, to be decreasing with an estimated number of 1.9 billion people living in absolute poverty in 1990 down to 1.2 billion in 2008. Similarly, the equalization of the status of individuals regardless their gender, sexual orientation, ethnicity, religious beliefs too seems to be steadily increasing with the *Equality Act* from 2010 in the *UK* as but one example.

Further, the global world has seen enormous changes in terms of technology including the advance of information technology, the spreading of mobile and wireless networks and great advances in engineering and medicine.

So the question is: What kind of cognitive music aesthetics would we expect to grow and flourish in such a climate? While the increased complexity of the world might encourage some to seek shelter under an umbrella of simplicity, such as composers like Michael Nyman and Arvo Pärt, it appears doubtful that much importance can be attached to this approach. Similarly, we would expect a music aesthetics which glorifies war and inequality to be of marginal significance if any. In contrast, we might expect a cognitive music aesthetics which embraces complexity and, at the same

time, fosters accessibility. However, what this exactly means, remains to be seen.

VIII. CONCLUSION

We set out to define what we could call a cognitive music aesthetics on an abstract and theoretical level initially. Now, while this attempt was somewhat successful, it remained abstract and theoretical only until we endeavored to put the concept of a cognitive music aesthetics to its test by applying it to different time period within the Western Civilization. Here, it was particularly interesting to see that the cognitive categories underpinning a music aesthetics can be observed as being isomorph to other areas of human activity such as philosophy, architecture, mathematics and politics. The author admits that the paper derives weakness from the fact that at its very best it can be viewed as a "taster" rather than anywhere near comprehensive. At the same time, this too can be seen as a strength as it may open up an area for investigation, which has been noticed by researchers such as Blaukopf and Henle, but has not received much attention elsewhere. Should this be the case, the paper will have served its purpose.

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