

# Understanding Music from a Complexity Perspective

## Hopeful reflections in times of crisis

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### Abstract

*This talk presents some findings from an interdisciplinary doctoral study completed at Stellenbosch University in 2015. Written under the co-supervision of a musicologist and a philosopher, as well as following recent developments in disciplines such as the life sciences and ecology, the dissertation stands as a first attempt of rigorously applying an epistemology of complexity thinking to music. Its findings strongly support the hypothesis that music itself is best understood as a complex phenomenon and that musical creation and perception should accordingly be recognized as complex activities.*

*Protracted procedures following a derailed examination process and an ensuing dispute have unfortunately prevented any form of constructive engagement with the study's content to date. Almost two years after its first submission, this lecture finally affords the author a first opportunity to account for his work, to outline its potentially far-reaching implications and to reflect on the underlying reasons for its initial rejection.*

*Departing from a brief introduction to complexity theory, the application of this approach to music is demonstrated. By unpacking the notions of 'openness' and 'context' – as but two examples of concepts that pertain both to systems and to music in special ways – it is shown how a complexity approach offers compelling alternatives to modernist perceptions of music and, moreover, can facilitate the integration of music into larger discourses. The complexity perspective is one of hope in times when such links to pressing questions urgently have to be made.*

### Dedication

I wish to dedicate this lecture to the memory of Paul Cilliers, without whose inspiration I would never have embarked on this project. We had just begun our collaboration in earnest in about April 2011, so that I was one of the many students and colleagues for whom his untimely death in July of that year came as a severe blow. I am certain that Paul, had he still been with us, would have been here today, to celebrate this milestone of presenting at least an initial outcome of our project. As it is still far from completion, his mentorship, especially in its unique guise of simultaneously wise and good-humoured advice, remains sorely missed.

### Background

When I submitted my thesis at the end of 2014, I was greatly excited about my findings as they seemed to indicate a wide range of most enabling applications to music, from a perspective that had not yet been explored in this discipline. I was therefore totally unprepared for the disaster that struck during my defence. What at first seemed like awkward misinterpretations due to a bad telephone line and the broken English of a foreign examiner, soon grew into a case of insurmountable dissent. A protracted debate about peripheral matters prevented the panel from engaging with the core results of the study. Even so it led two examiners spontaneously to reassess their marks (in opposite directions!), on which they subsequently insisted, thereby forfeiting a unanimous evaluation result.

A dispute arose, the work had to be re-examined and I could only graduate a year later than envisaged. Unfortunately the delay has also meant it has not been possible to present the work to date. Therefore I am all the more grateful that, finally, we are gathered here, more than six years after Paul and I first envisaged this project, and which Stephanus Muller subsequently accompanied and mentored. I also sincerely thank members of the previous and current research committee, Pieter Fourie, Stella Viljoen and Cindy Steenekamp, as well as the vice-dean of Humanities, Lize van Robbroeck, for picking up the shards of a derailed process and for granting me this opportunity finally to come to the point and to the heart of the matter – to speak about music as a complex phenomenon.

In this lecture I would like to do three things,

1. briefly introduce you to Complexity as philosophical concept,
2. explain why I consider music to be a complex phenomenon, and
3. unpack two systemic topics from a complexity perspective and sketch how this might apply to music.

My talk will be followed by a response from Minka Woermann, whom I greatly thank for her engagement with my work. After that we invite your comments and questions.

## I. What does Complexity entail?

It is a daunting task, to speak about complexity because, by definition, the topic defies the very notion of a finite 'de-finition' – not because it is infinitive, but rather because it is dynamic, provisional, conditional. Hence it is irreducible: there can be no simpler definition than the phenomenon itself. It cannot be captured, summarized or described comprehensively, because it will always be 'more complex' than even the most complex understanding will grasp. It is only possible to say something about it, given the understanding that this will be fragmentary and provisional. That said, I chose to highlight five aspects pertaining to complexity:

### i) Distinguishing between 'complicated' and 'complex'

One way to begin this explication is to distinguish between something *complicated* and something *complex*. Something complicated is usually an accumulation of a great number of items, which can, however, be reduced to a number of simpler sets; it can be analysed, sorted out, disentangled and fully understood in terms of its components. *Something complex is irreducible to smaller parts.*

Something complicated is a conglomeration of many things or factors that yet remain distinct; they may be positioned in close proximity, and appear overwhelming to a casual observer. But even so, a particular component will fulfil a specific function, linearly and predictably. *A complex state emerges from non-linear interactions and feedback loops. It emanates as a whole, in which the particular components become transformed or disappear altogether.*

Typically, technology and machines are complicated; they can be repaired by replacing old parts with new ones without affecting the overall functionality. *Complexity is more often found in the realm of living beings, organisations, people, societies, etc. where no part can be replaced with out affecting the whole.*

Paul Cilliers used to summarize the difference by means of a metaphor: A Jumbo jet is complicated – French Mayonnaise is complex.

## ii) Complexity is a universal (ubiquitous, normal, everyday) systemic condition

Complex relations give rise to systems. Systems, in turn, bind complex relations into functional and viable wholes. Thought of in terms of systems, complexity proves to be a most familiar phenomenon and thereby loses some of its dauntingly incomprehensible quality. We encounter it everywhere on countless levels: in any living organism, in families, societies, cultures, in language, thought, consciousness. It even plays a crucial role on levels of atoms, where different constellations of essentially the same building blocks give rise to the vastly different material properties of the natural elements.

Systems consist of parts yet function as wholes. This leads to a 'fundamental complexity of a system, [which] associates in itself the idea of unity on the one hand and of diversity or multiplicity on the other, which in principle repel and exclude each other.'<sup>1</sup> Since a system comprises numerous components, it is no 'elementary unit', but instead must be considered a compound<sup>2</sup> unity, or – considering the complexity of relations at play – a 'complex unity'.<sup>3</sup> The one can neither be reduced to the multiple, nor the multiple to the one. Both have to be conceived together, '*simultaneously complementary and antagonistic* – consisting of a whole and parts, being one and diverse.'<sup>4</sup>

A system is not just the sum of its parts, but a whole that – as the saying goes – is 'more' than the sum of its parts. This new quality of being 'more' results from a system's organization and its unity.<sup>5</sup> What is 'more' and, moreover, 'new' (in the sense of original, unpredictable) can be called *emergence*. In a sense even the 'whole' of a system is an 'emergent quality', thus emanating simultaneously as its own *cause* and *consequence* (its 'fruit'):<sup>6</sup> 'the whole being emergent, and emergence being a trait proper to the whole.'<sup>7</sup>

While a narrow Cartesian worldview might be critiqued for its 'reductionist blindness (which sees only the constitutive elements)',<sup>8</sup> Morin points out that a 'holistic blindness (which sees only the whole)' is equally flawed. Holistic approaches, meant to redeem reductionist limitations, tend to overlook the inherent systemic property of *constraining* components. This property manifests in obvious organizational 'mechanisms of regulations and control', restrictions, adjustments and specifications as a means of maintaining systemic order. In this respect, every system subjugates its parts to the point of completely and existentially inhibiting certain qualities and prohibiting certain 'possibilities of action or of expression'.<sup>9</sup>

## iii) Complexity is a most enigmatic condition

Even though systems are very common and familiar phenomena, they actually remain inexplicably enigmatic, especially with regard to the notion of 'emergence'. We all know what it means. Yet the term is at best descriptive and offers no comprehensible explanation. Emergence remains a systemic property that can only ever be observed after the fact.

What is more, it must be acknowledged as existing *ontologically* through the quality of (its) 'newness'.<sup>10</sup> In

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<sup>1</sup> Morin, *Method*, 102, my emphasis.

<sup>2</sup> Morin calls this 'global unity', a term which I consider somewhat ambiguous.

<sup>3</sup> Morin, *Method*, 102.

<sup>4</sup> *Ibid.* my emphasis.

<sup>5</sup> Morin, *Method*, 103.

<sup>6</sup> 'Like fruit, emergence is always ultimate (chronologically) and always first (by quality). It is both a product of synthesis and the force of synthesis. And in the same way that the fruit, ultimate product, is at the same time ovary-bearing reproductive power, likewise emergence can contribute retroactively to producing and reproducing what produces it.' Morin, 107.

<sup>7</sup> Morin, *Method*, 103.

<sup>8</sup> *Ibid.*, 109.

<sup>9</sup> *Ibid.*, 111.

<sup>10</sup> *Ibid.*, 105.

this case 'new' means 'discontinuous, unpredictable and unforeseen' and, moreover, 'irreducible' once manifested. It emerges 'out of the blue, inexplicable, suddenly existing'. In Morin's words: 'Emergence imposes itself as *fact*',<sup>11</sup> with the 'force of an *event*'.<sup>12</sup> It pre-empts its deductibility, constitutes a 'logical jump',<sup>13</sup> which first of all must be recognized before it can be understood and thereby contradicts our very concept of (scientific) understanding.

Another puzzling aspect of systems is the paradox of a whole being *more and less* than the sum of its parts *at the same time*. This means nothing less than that *the whole is not the whole*, or at least, that a noteworthy difference must be accounted for somewhere. One way of accounting for this is to say that a *system transforms itself and its parts*.

A system emerges from the organized interaction of its parts, which it in turn binds, constrains, directs and aligns, repressing certain partial potentials and enabling others. The new qualities – arising from the retroactive and recursive feedbacks – will eventually allow for new interactions, which may in turn lead to new emergences and thereby to a new system. As long as this is a dynamic process the system carries in itself *the seed for its constant adaption*, change, transformation, growth as well as potential decline.

#### iv) Complexity requires an extended epistemology

Complex phenomena defy positivist and reductionist explanations; they require paradox thinking, logical jumps and time and again confront the observer with unpredictable emergences. Even though they extend over disciplinary borders and apply in a seemingly universal manner, they nevertheless require individual, localized and participatory observations to be grasped. From all of the above it follows that any scholarly engagement with complexity will require an extended epistemological and methodological footing, including trans-disciplinary, subjective and heuristic approaches:

##### *Trans-disciplinary epistemology*

The scientific recognition or rediscovery of systemic interactions in the 20<sup>th</sup> century can be traced to two distinct sources. One is the field of cybernetics, where Walter Cannon's studies of homeostasis and self-regulation and 'feedback'. The other is the work of the Austrian biologist and mathematician Ludwig von Bertalanffy, whose contribution to systems thinking resulted from his attempts at 'articulating an organismic approach to the study of living systems that would explore the nature and source of complex patterns of organization.'<sup>14</sup> Von Bertalanffy notes the trans-disciplinary application of systems thinking, compelling him to propose it as universal epistemology in the formulation of his General Systems Theory (GST).<sup>15</sup>

Interestingly the rediscovery is made from two fully opposite trajectories of thought: Cybernetics starts off from technological research and arrives at *models of living systems based on principles observed in machine systems*. General systems theory (GST) originates from the study of the organization of living systems and subsequently proposes that these are universally applicable, in other words that *mechanical or social systems may be modeled on biological principles*.

The notion of a general 'systemism' has since been critiqued for its dangerous proximity to empty proclamations of unity and holism. Similarly the hype surrounding interdisciplinary approaches has often been

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<sup>11</sup> Morin, *Method*, 106, original emphasis.

<sup>12</sup> *Ibid.*, 105, original emphasis.

<sup>13</sup> *Ibid.*, 106.

<sup>14</sup> *Ibid.*

<sup>15</sup> Von Bertalanffy, *An Outline of General Systems*.

debunked as hardly more than the recognition and comparison of superficial similarities in different disciplines, without true reciprocal interrogation or integration.

This should certainly caution us against the temptation of applying theories in a generalized manner. However, as Paul Cilliers has argued, the acknowledgment of general complexity is not an act of *aggrandisement*. On the contrary, it is a most humbling experience forcing us to think beyond disciplinary boxes. As ‘we do not really have a language which can deal with general complexity we can only approximate an understanding of such intensity by employing a plurality of descriptions. Trans-disciplinary activities are our only option.’<sup>16</sup>

### *Subjectivity*

The systems perspective frees subjectivity from the stigma of relativism or randomness, with which it is often associated. Instead the subject, defined by its very subjectivity, is understood as actively integrated into a web of relations. Contrary to its perceived randomness, it is precisely the quality of *subjectivity* that guarantees unique *specificity*, once the subject is anchored in systemic relations. Instead of assuming that subjectivity is *relative* in an *absolute* sense it should be recognized as *relational* in a *systemic* sense.

Clearly, subjective perceptions or assessments will be particular, provisional, localized. That they cannot be universal and ‘final’ should be considered an appropriate virtue, rather than a shortcoming. From a complexity perspective the assumption that objective and final assessments can be made, is hubristic. Particular, provisional and localized answers are all that complex systems permit us to know about them, as they resist reductionist methods. Under these circumstances, the faculty of subjective perception is a real asset: Not only is it all we have and can resort to; it is sufficiently appropriate to ‘make’ sense of complexity.

### *Non-methodology*

‘Morin describes his *méthode* as a ‘path laid down in walking’<sup>17</sup> where none previously exists, a ‘method emerging from the research.’<sup>18</sup> I am not furnishing the method; I am starting out on the search for the method. ... I am starting out with the refusal to simplify.’<sup>19</sup>

Once again it may be noted that a humbling or even humiliating acknowledgment – of uncertainty, absence of solid empirical ground, absence of reliable guidelines – underpins this statement. But this time it is turned around and viewed as a liberating opportunity, as an impulse to courageously embrace a ‘non-method’,<sup>20</sup> the avoidance of setting up rules *for* (or *before*) the search (and research) and thereby placing the cart before the horse. Morin’s attitude affords the researcher the freedom to employ both logical and ‘non-logical’ steps, the first ‘to consolidate what has been achieved’, the latter ‘to keep all achievement open to further advance.’<sup>21</sup>

To the astute observer – and especially to the rational, rigorously and scientifically inquisitive mind – it should become clear that complexity cannot be ‘grasped’ by just slightly expanding positivist, reductionist, and linear thinking; that it will not do to ‘acknowledge’ complexity in the world and ‘leave it at that’, but that such an acknowledgement will sooner or later require, compel, instigate, motivate and inspire an appreciation that in itself is complex.<sup>22</sup> This would in principle amount to a complex epistemology.

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<sup>16</sup> Von Bertalanffy, *An Outline of General Systems*.

<sup>17</sup> Morin, *On Complexity*, xxv.

<sup>18</sup> Ibid.

<sup>19</sup> Ibid., 16.

<sup>20</sup> Morin, *Method*, 9.

<sup>21</sup> Lonergan quoted by Bélanger, Ibid. xix.

<sup>22</sup> Arguably this may be perceived as a case of ‘structural coupling’ at work.

Arguably, such a knowledge system does not exist, as it cannot exist in a ready-made state. It can only arise in and from its (local, individual, historical) application. Hence *complexity thinking must entail a courageous heuristic component*. From a complexity perspective this is its virtue; from a positivist perspective it might well be perceived as a vice.

There is no way that conflicting value judgements such as these about different epistemological approaches can be resolved ‘empirically’ by means of assessing objective references. Instead, the value of each approach can only be known subjectively. It must be accepted that complexity may lead to empirical undecidability.

#### v) Complexity spells out limits of modernist thinking

By now it should have become clear that complexity thinking oversteps many of the limits that conventionally define modernist epistemologies. With ‘modernist’ I chose a deliberately wide term to describe the eclectic mix of residual remnants of past and present ideologies that inform the main streams of current thinking. This entails the belief in the unity of experience, the supremacy of logic and scientific rationalism that assumes reality as a whole can be rendered and comprehended, that problems can be isolated, analysed and solved. It entails the endorsement of principles of classical scientific enquiry – positivism, analytical reductionism and empirical objectivity. It clings to the conviction that ideas and concepts are determinate, and that human beings share a transcultural and transhistorical level of universal experience.<sup>23</sup> It includes a prominent modernist theory’s inclination toward totalization and determinacy ... aspiring to a universal system of meaning<sup>24</sup> famously captured in Lyotard’s summation of Modernism as the attempt of establishing a ‘primacy of a universal or master narrative ... against which everything [can, and hence] must be understood.’<sup>25</sup> Even if this compilation of characteristics can only cursorily outline the scope of what may be termed modernist thinking, it should have become quite clear that what is listed here, clashes rather persistently with complexity tenets.

Morin and other complexity thinkers have linked the advent of complexity thinking to the first discoveries of ‘pockets of disorder’ at the very heart of physical order<sup>26</sup> that gradually compelled the acknowledgment of such occurrences as far more than negligible instances of disruption in a universe previously thought to be governed by immutable Newtonian, Hegelian or at least Darwinian laws. Even though the concept of systems had been entrenched in Western thought since antiquity, the phenomenon of systemically recurrent organizational principles as such remained largely unnoticed under the auspices of ‘atomistic’ views that focussed on the observation of finite elements or structures, as well as linear, mechanistic and predictable interactions between such ‘objects’. Due to a century-long predominance of classical sciences and further corroborated by the enormous successes of technological innovations leading up to the industrial revolution, the systemic view faced considerable resistance at first. It could, in fact, only spread once the pioneering research of Einstein, Planck, Gödel, Heisenberg, Poincaré<sup>27</sup> and the likes began to reveal deep ‘breaches in the

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<sup>23</sup> Clippinger, *Modernism*, my emphases.

<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

<sup>26</sup> With reference to the parallel societal upheaval of the French revolution, Morin notes that the term ‘revolution’ before 1789 and as applied to celestial bodies signifies ‘faultless repetition’, underlining the ‘idea of Universe [as] the most perfect of clocks.’ After this date the same term (intrinsically simply denoting the notion of ‘rotation’) is predominantly associated with revulsion, rebellion, ‘break up and change.’ *Method*, 30.

<sup>27</sup> By implication reference is made to the theory of relativity, quantum mechanics, the principle of incompleteness, the uncertainty principle and the notion of ‘dynamical instability’ respectively.

epistemological framework of classical science'.<sup>28</sup>

In this respect it is no coincidence that van Bertalanffy first publishes a generic description of systemic principles<sup>29</sup> as late as 1950 – the same year in which historians generally consider the period of 'Modernism' to end.<sup>30</sup> Ever since systems and complexity suddenly began to rise and be recognized widely in a large number of disciplines – albeit with the notable exception of music, an interesting fact to which I will return.

In hindsight, but unbeknown to most of us until today, it can be said that exactly at the historical moment of Modernism's final demise in the aftermath of World War II, a comprehensive alternative to modernist thinking was already proposed. Given the complexity of the matter it is not surprising that it took another two generations to flesh out the new paradigm in more detail. But today – almost 70 years later and in view of the irresolvable problems that now loom large as legacy to modernist approaches – there can hardly be any excuses anymore to cling to an out-dated ideology, if a far more compelling alternative is available.

I am convinced that complexity thinking in all its consequences can be no extension of modernism, but is set to supersede it, once the time for such a paradigm change is ripe.

## 2. Why should music be considered a complex phenomenon?

I posit that most musicians intuitively understand music as a systemic and complex activity. Many musical descriptions indicate as much, even without using these specific terms. The claim *per se* is therefore not new. What arguably is new, is to reframe an age-old intuitive understanding with the help of complexity vocabulary and to do so within a professionalized academic environment that tends to overlook musical relations if they lie outside the framework of concisely defined fields of disciplinary specialization.

### i) Music is no thing, but an (inter-)activity.

Western thought has developed a reified concept of music, with which this phenomenon can be treated abstractly, as an isolated topic or field of study, without reference as to who is making it under what circumstances. The concept is strongly linked to that of 'written music', which, strictly speaking is not music, but only a *form of instruction* how to make music.

From an astute observation of the phenomenon itself it should be clear that there is no such 'thing' as music, as 'it' always entails an activity and the experience of multiple interactions. The noun 'music' must be qualified as a mere abstraction of one aspect of such interactions.

Thinking of music in a reified manner fails to acknowledge its constitutive quality of particular, individual and conditional human engagement with instruments, sounds, ideas, emotions and with fellow humans. It can therefore be stated that the term 'music' in its current, everyday use, effectively amounts to a form of injudicious appropriation. On the one hand it prevents an apposite estimation of music's propensities as a form of circumstantial expression, as a medium of discourse or as a vehicle for transcending communal experiences; on the other, it champions an unchecked trend of commoditizing music in a seemingly unstoppable manner.

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<sup>28</sup> Morin, *On Complexity*, 9: 'The breach of micro-physics revealed the interdependence of subject and object, the insertion of randomness into knowledge, the de-reification of the notion of matter, the eruption of logical contradiction in empirical description. The breach of macro-physics unites in a single entity the concept of space and time that have until now been absolutely heterogeneous...'

<sup>29</sup> Ludwig von Bertalanffy, *An Outline of General Systems*.

<sup>30</sup> David Clippinger, 'Modernism', *Routledge World Reference*, Encyclopedia of Postmodernism, 2003, pp. 480.

Correcting a somewhat unbalanced musicological preoccupation with systematic and historical questions, ethnomusicologists must be credited for having shifted the focus back to the actual practices of music. One of the first scholars to claim that music can never fully be understood on its own terms, but ultimately only in 'the [larger] terms of its society and culture'<sup>31</sup> was John Blacking. Interestingly, the insight dawned on him while he was studying music of the Venda people in the 1970s. His observations led him to his famous definitions of music as 'humanly organized sound'<sup>32</sup> and reciprocally, that of thriving musical cultures as 'soundly organized humanity.'<sup>33</sup>

An even more influential impulse in this direction came from Christopher Small's categorical replacement of the noun 'music' with the verb 'musicking'.<sup>34</sup> Small conceives this activity in the widest possible sense. It is not limited to the act of performing music, not even to the physical act of realizing musical sounds, but extends to each and everyone that is involved in a musical performance in any capacity whatsoever – e.g. 'dancers, ticket collectors, piano movers, roadies, cleaners and all.'<sup>35</sup> Obviously such an array encompasses a large variety of different tasks. Binding them all into the act of musicking is not supposed to skim over their differences. On the contrary, Small's point is 'that all these different activities add up to a single event, whose nature is affected by the ways in which all of them are carried out.'<sup>36</sup> From an even broader perspective they can all be viewed as 'aspects of the one great activity that is called musicking'<sup>37</sup> and it is his declared purpose to uncover the multiple and complex relations (many of which reach deeply into seemingly mundane spheres) that constitute any given musical process or event.

Neither Blacking nor Small were complexity thinkers, but they very clearly observed that systemic interactions are crucial and constitutive to the process of making music.

## ii) Music emerges from the interaction of different agents

Music never rests with a single agent. Neither composer, nor performer or listener can create and experience music all alone. A composer can at most conceptualize a work, subsequently to be realized in an altogether different process, requiring a performer. Similarly, the performer cannot realize music on his or her own: unless there is a listener involved, the expressive and communicative aspects entailed in the music making will not manifest; hence the distinction between practising (alone) and performing (for others). And the listener's musical perception obviously relies on the previous contributions. However, if one accepts the common understanding of musical perception as the primary (and ultimate) goal of all musical activities, then this seemingly passive role becomes constitutive to the whole process. In a sense it is the listener's task to make the whole process meaningful and thus, like composer and performer, to engage with it purposefully.

The point to be made, therefore, is that a full musical experience cannot occur without all the constitutive parties' involvement. A musical emanation requires each one's contribution, interaction and involvement, yet at the same time it lies beyond each individual's distinct capacities and responsibilities. While none of the involved agents can create music on their own, it equally holds that none may at any time be left out of the process if music is to emerge.

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<sup>31</sup> Blacking, *How Musical Is Man?*, 16.

<sup>32</sup> *Ibid.*, 3 ff.

<sup>33</sup> *Ibid.* 89 ff.

<sup>34</sup> Small, *Musicking*, 9.

<sup>35</sup> *Ibid.* 10.

<sup>36</sup> *Ibid.*

<sup>37</sup> *Ibid.* 11

Once again this constellation shows a clear congruence with the systemic characteristic of interactively distributed functions. No part (not even a seemingly passive one, as the listener in this case) can be omitted or exchanged without changing what emerges as the whole (in this case the whole musical experience).

### iii) Music is always something more and less than (only) music

The tenet that it is impossible to de-fine a complex system comprehensively, applies to music as well. Not only will music be something different to each participant involved in a musical experience, it will also be different at particular performances, in different contexts, played in a different style, etc.

The argument that this conditionality only concerns the perception of music does not change the facts, as our only means of engaging with music is via subjective perception. Even the information and quality contained in an external source (sound waves, recording, score) only manifests in our consciousness, i.e. in the cognitive domain.

But without having to exhaust the constructivist argument (that music is 'realized' cognitively), it is worth referring to the concept of a *music-language continuum*, as suggested by Stefan Koelsch.<sup>38</sup> This linguistic understanding grounds in the recognition of the 'transitional nature of the design features of music language'.<sup>39</sup> It perceives music as a systemic interaction that always simultaneously straddles the domains of expression and communication, informed by axiomatic and contextual considerations and thereby linking 'intra-individual and extra-individual worlds'.<sup>40</sup>

In this model music is framed as a medium serving the communication between sending and receiving individuals. Hence all communicational contingencies may apply: Something might be said, but not understood. Nothing might be intended, but something be heard. Something might be expressed, but something else interpreted, etc. The chances of a transfer without loss or noise tend towards nil.

In the case of music the potential for misunderstandings is especially high, as at most it can be considered an abstract language, with no specific meanings linked to its signs. Arguably it is precisely this additional interpretative scope that makes music so very popular. It will hardly be possible to find a person, for whom music means nothing and perhaps equally difficult to find two people, for whom it means the same. A richly individual, overlapping, diverse, provisional and circumstantial scope of 'subjective attachments' to music is hereby indicated.

### iv) Music cannot be reduced to its different components

On all levels this holds for music as well. Starting from the most basic components, a group of single notes suddenly becomes a motive, a rhythmic figure, a phrase, a line, a melody, a song, a gesture – a vehicle for expressions, associations, ideas and meaning etc. Clearly each higher-level *Gestalt* is more than the sum of its parts on the previous level.

Another example concerns what musicians often call the 'magic' of music. We all know what that is: the little extra that makes a performance memorable or inspiring, that sets off a rush of feelings or moves a listener to tears. Arguably, for many people this 'magic' is what music is all about, what matters most.

Often it is ascribed to the virtuosity or charisma of an exceptional musician, e.g. the most talented competition winner playing a very expensive instrument. Or to the hype resulting from massive marketing, world-famous names and expensive tickets. Against these material prerequisites I posit the magic results from

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<sup>38</sup> Koelsch, *Brain and Music*.

<sup>39</sup> *Ibid.*, 249.

<sup>40</sup> *Ibid.*, 247.

the wonder of emergence. If things ‘come together’ in the right way even a very humble musical event can lead to a profound musical experience (e.g. a mother’s lullaby, a song of consolation at a funeral, etc.).

Every musician knows that the ‘magic’ can never be guaranteed. It is comparable to the ‘more’ that must come from somewhere else, that no amount of preparation can fabricate, but that is required for the ‘whole’ manifestation of music.

Adding more examples of systemic analogies to be observed in musical relations will not make for any better case, as my hypothesis cannot be proven empirically. Once again it needs to be reiterated that it is just as much a decision to frame music as a complex phenomenon, than to acknowledge this an ontological fact. Instead of postulating my theory, I will merely propose it but profess that it has time and again helped me find useful practical and productive answers in the most diverse musical situations. If only for its enabling potential the following seems to be a useful ‘complex theory of music’:

*Music is a complex phenomenon that emerges from purposeful systemic interactions.*

### 3. Reflections on boundaries and contexts of complex systems

Having briefly indicated what a complex understanding of music might entail, the question arises what the consequences or benefits of such an understanding would be. Again there can be no short answer and any long answer will need to be a case study of particular circumstances. However, I wish to use two examples to demonstrate an application of complexity thinking to music in a principal manner.

Based on a general systems epistemology the following section therefore attempts to unpack two constellational aspects of complex systems. The suggestion is that they similarly hold for music and that, reciprocally, their observation in musical contexts corroborates general systemic regularities. The reflections pertain to the nature and role of *boundaries* as well as *contexts* of complex systems and, by implication, musical systems.

To keep avenues of trans-disciplinary transferrals open for the time being, I will avoid any direct musical references and restrict my presentation to the meta-level of systems theory.

#### i) Boundaries

##### a) *Boundaries distinguish system and environment*

Distinguishing a system from its environment entails defining a boundary. The recognition, perception and drawing of boundaries is a basic, constitutive and ‘initiating’ systemic act.<sup>41</sup> Boundaries identify and maintain the integrity of systems. A system’s functionality crucially depends on its organisational and structural closure. As any specific organization will be ‘realized’ through an equally specific structure, it may be said that a system is ‘structurally determined’.<sup>42</sup> Its organization (i.e. its functionality, integrity and generativity) emerges from its structure, in which its boundary plays a pivotal role.

A distinction between *organization* and *structure* becomes important when considering the system’s relation to its environment. Any environmental influences can only affect structure. Should such influences change the

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<sup>41</sup> Mingers, *Realising Systems Thinking*, 65.

<sup>42</sup> Ibid., 41. This corresponds with Maturana’s autopoietic concept.

structure, this *could* change the organization, though not necessarily so, as systemic resilience usually allows for a fair degree of adaptation to changing environments before the organizational integrity or functionality is affected.<sup>43</sup> Strictly speaking, the environment cannot make an *input* directly into a system's *organization* as this is closed and structurally determined. Environmental changes might well affect the systemic structure and thereby *trigger* organizational changes. But, in their propensities and functional options, organizational changes are structurally (systemically) and not environmentally, dependant.

This conception has led to a widespread understanding of systems as principally closed entities, a position most notably represented and popularized by the German sociologist Niklaus Luhmann.<sup>44</sup> However, as will be shown from a more nuanced understanding of boundaries, this assumption needs to be qualified.

Many different kinds and classes of boundaries exist. They can be physical, conceptual or inherently arise from forms of alliances or memberships. Moreover, boundaries display highly different and changing degrees of permeability. (Consider skin for example, which is a boundary for light waves and physical touch, but not for X-rays, bacteria or a scalpel.) Boundaries must be considered dynamic (they can adapt, evolve and change) and as intrinsically part of the system they entail (not some kind of separate, enclosing entity). But even so they remain ambiguous as to some extent they depend on an observer's framing (of what an observer perceives to belong to a system<sup>45</sup>). On closer scrutiny boundaries appear as complex systems in their own right.

#### b) Boundaries link system and environment

A boundary *distinguishes* a system from its environment but, by the same token, it also *links* it to its environment. The model of the 'permeable membrane' aptly captures this *double nature*. Instead of functioning as *absolute barriers* ... permeable boundaries of dynamical systems are best conceptualized as *sites of phase changes*. By selectively excluding some inputs and permitting others they concurrently maintain a system's integrity as well as allow for the possibility of dynamic transformation and are thus ultimately responsible for both a system's actual identity as well as its potential and actual evolution.<sup>46</sup>

In a sense, boundaries are therefore the most interesting areas of a system, 'active sites where qualitatively new phenomena emerge.'<sup>47</sup> Since they are not impenetrable barriers, boundaries manifest as opportunities of transgression, representing at once (*concurrently, antagonistically, complementarily*) a dynamic system's conservative structure as well as its creative potential. The element of 'crossing, stepping over, exceeding' contained in every creative impulse hence requires an 'instigating boundary'.

Paul Cilliers once used the example of the eardrum<sup>48</sup> to illustrate this principle: As the tympanic membrane *obstructs* arriving sound waves, it *absorbs, integrates* and transfers them through hammer, anvil and stirrup to

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<sup>43</sup> Even if a system is destroyed by its environment, arguably the disintegration of its *organization* only follows from that of its *structure*. Even in this case the systemic organization is hermetically 'sealed off' from the environment.

<sup>44</sup> Niklas Luhmann, *Social Systems*. Luhmann argues that any systems can only refer or 'speak' to itself in its own 'language' and hence has no way of 'knowing' the environment.

<sup>45</sup> 'A system is not something given in nature, but something defined by intelligence. ... [It is selected] from an infinite number of relations between things, a set which, because of coherence and pattern and purpose, permits an interpretation of what otherwise might be a meaningless cavalcade of arbitrary events. It follows that the detection of system in the world outside ourselves is a subjective matter. Two people will not necessarily agree on the existence, or nature, or boundaries of any systems so detected.' Stafford Beer, *Decision and Control: The Meaning of Operational Research and Management Cybernetics* (John Wiley & Sons, London 1966), 242-3 quoted in Mingers, *Realising Systems Thinking*, 86.

<sup>46</sup> Alicia Juarrero, 'Complex Dynamical Systems and the Problem of Identity', 100.

<sup>47</sup> Juarrero, 100.

<sup>48</sup> *Ibid.*

the cochlea and the organ of Corti (all boundary elements that serve as amplifying elements at the same time), where the hair cells finally translate chemical to electrical impulses. *A boundary constituting obstacles and constraints is necessary for the transformation of sound waves to nerve stimulation and the emergence of hearing.*

Reflecting on this example it is correct to say that the boundary of the eardrum is closed with regard to physical sound, as it keeps the pressurized air pockets (sound waves) out. But it is not correct to deduct that the boundary therefore ‘closes’ the system, for this is only half the truth. By virtue of keeping the sound waves out, *the boundary makes them intelligible relative to the structural and organisational requirements of an aural sensory system.* Only from a very superficial observation could one propound a closed system in this case. A more differentiated analysis would note various degrees of permeability: a physical *barring* of the pressurized air pockets, but a *transferral* of their respective frequencies (i.e. the crucial information contained in the pressure pockets) for further internal processing.

A boundary’s permeability is thus of special importance, with regard to a system’s interactions and relationships with its context (environment, eco-system). A boundary’s structure and functionality will depend on the kind of interaction that is required, albeit conservative (to shield and protect), or creative (to take in matter, energy or information). In most cases both aspects pertain.

### c) *Systems are bounded and open*

It has now been argued that systems are both bounded *and* open, indicating a ‘complex link’<sup>49</sup> between both notions. Morin reflects on this apparent paradox by suggesting that the decisive distinction to be made is not between ‘open’ or ‘closed’, but between ‘active’ and ‘non-active’ systems where different combinations of relative ‘openings’ and ‘closures’ may be at work concurrently.<sup>50</sup> Complex systems principally exchange energy, matter and information with their environments.<sup>51</sup> Yet, no living (complex) system can ever be absolutely closed,<sup>52</sup> as this would imply its (organizational) death. A degree of opening is vital and this leads Morin to the radical conclusion that ‘the idea of opening ... transcends the idea of system’.

Colloquially speaking a system in equilibrium is dead as it has ceased to interact organizationally and functionally with its environment. From this it can be inferred that living systems need to be in disequilibrium and that therefore all living systems must be considered ‘open’.<sup>53</sup> It is important to note that the ‘disequilibrium in the energetic flux’ upholds the organizational regulation, i.e. the structure or ‘constancy of the internal environment’<sup>54</sup> and that – counter-intuitively – only a ‘nourishing disequilibrium’ guarantees a ‘state of stability and continuity.’<sup>55</sup>

The fact that ‘structures remain the same *even though* the constituents are changing’<sup>56</sup> can be attested by the observations of flames, eddies, waterfalls or any living organism. This is remarkable enough, yet what is really significant is that systemic structures remain the same only *because* the constituents are changing. (Morin considers this to be ‘a primary, central, obvious, key problem of living beings... ignored and obscured

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<sup>49</sup> Morin, *Method*, 196.

<sup>50</sup> Morin, *Method*, 196.

<sup>51</sup> *Ibid.*, 197.

<sup>52</sup> *Ibid.*, 196.

<sup>53</sup> Morin, *On Complexity*, 10.

<sup>54</sup> *Ibid.* 10, 11.

<sup>55</sup> *Ibid.* 11.

<sup>56</sup> Morin, *On Complexity*, 11, my emphasis.

by Western Cartesian metaphysics, for whom all living things are considered closed entities.<sup>57</sup>) Without renewed input and change the organization that maintains systemic structures collapses, whereupon the structure itself disintegrates.<sup>58</sup>

These considerations lead Morin to link systemic 'openness' directly to its organization and, by implication, to its 'intelligibility',<sup>59</sup> functionality and purpose. He argues conclusively that a system's identity rests 'not only in the system itself, but just as much 'in its relationship with its environment.' Moreover, 'this relationship is not defined by a simple dependence: it is in fact *constitutive* of the system.'<sup>60</sup> This is a revolutionary understanding of the relationships of systems and their environments and I therefore quote Morin at length:

*Reality is therefore as much in the connection (relationship) as in the distinction between the open system and its environment. This connection is absolutely crucial epistemologically, methodologically, theoretically, and empirically. Logically, the system cannot be understood except by including the environment. The environment is at the same time intimate and foreign: it is a part of the system while remaining exterior to it.*

Methodologically, it becomes difficult to study open systems as entities that can be radically isolated. Theoretically and empirically, the concept of open system opens the door to a theory of evolution, that can only come from the interaction of system and eco-system, and, in its most significant organisational leaps, can be conceived as the "going beyond", the surpassing of the system into a meta-system.<sup>61</sup>

If a 'component – system' relationship is considered to be inherently open,<sup>62</sup> then a component in one system might in fact be a system in its own right, or *vice versa*, a system might function as component in another, larger system (as can be visualized by the nested continuum of organs, organisms, families, societies). Hence the correlation 'component – system' is synonymous to that of 'system – eco-system', potentially allowing for a recursive holarchy<sup>63</sup> of systems nested in meta-systems. In this epistemological sense no final, absolute distinction between the system and its environment, between a definite inside and definite outside, between 'text' and 'context', can be made.

This understanding of an intricate relationship between system and eco-system is bound to change conventional perceptions of the notion of 'context', helping us to integrate environmental thinking into systems thinking as a matter of defining structural importance, rather than a vague and therefore merely optional reference to something external and irrelevant.

## ii) Context

I have mentioned already<sup>64</sup> that modernist approaches prefer to cut out contexts and instead prefer absolute findings that will be universally applicable, without specific contextual considerations. One understandable reason for this is that the notion of 'context' often remains unsatisfactorily vague. So-called musical contexts offer a good example of this fuzziness. Since 'context' may principally apply to any aspect – be it stylistic, aesthetic, historical, political, cultural, local, personal, etc. – contextual references often appear randomly vague or even purely conjectural.

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<sup>57</sup> Ibid.

<sup>58</sup> Morin, *On Complexity*, 11. It should be noted that Maturana's concept of 'organisational closure' does not imply a systemic isolation, but rather refers to the organisational integrity and autonomy *within* a system and is in fact guaranteed 'by the very fact that the system is open.

<sup>59</sup> Ibid.

<sup>60</sup> Ibid. my emphasis.

<sup>61</sup> Morin, *Method*, 11, original emphasis.

<sup>62</sup> Morin, *Method*, 97; see also Chapter 1, pg. 20 & 30.

<sup>63</sup> Term coined by Koestler, to describe the nature of systems 'nested' within systems and avoiding the notion of 'hierarchy'.

<sup>64</sup> See pg. 6 & 7.

The notion of contexts that I wish to evoke here should be rather more specific. While a context may in fact entail almost anything, the nature of the relationships that actually renders it a context – being an active eco-system to the system under discussion – should be elucidated specifically. I argue that a contextually relevant relationship is given if it accounts for at least one of three crucial aspects of a system's wellbeing: its *vitality*, its *autonomy* and its *sustainability* (survival). Such contextual connections can be described by respectively referring to Morin's concept of the 'steady state', Maturana & Varela's idea of 'structural coupling' and Bateson's 'evolutionary unit'.

a) *Dynamic Context: Disequilibrium of the Steady State*

The 'steady state' describes the 'nourishing disequilibrium' that allows a system to maintain an apparent equilibrium, a state of stability and continuity ... constant but fragile.<sup>65</sup> The somewhat paradoxical feature of such a system is that its structural organization remains the same while its constituents change. This covert exchange amounts to the 'vitality' of any animated system, from the waterfall, to the flame or any organism where 'molecules and cells are renewing themselves incessantly, while the whole remains apparently stable and stationary'.<sup>66</sup>

As stated previously, the notion of *equilibrium* or *disequilibrium* between system and environment is crucial in determining whether a system is 'dead' or 'alive'. Equilibrium is a sure sign of death, of complete structural integrity without any organizational interference.<sup>67</sup> While disequilibrium in itself obviously doesn't spawn life, it is an essential condition for any living system and thus a defining factor of life and liveliness. It describes a continuously dynamic and processual relationship that facilitates the necessary exchanges of matter, energy and information required to sustain a living being or system. This not only requires and implies that the system is open, but that it is *structurally, energetically and informationally linked to its environment*. While the environment can obviously not cause or guarantee life, it is nevertheless crucial for its subsistence.

In this sense the environment as 'contextual space' – condition, leeway, margin, ecological niche – for a regenerative disequilibrium must be acknowledged as an indispensable part of the system. It may not always be readily discernible. Even so, it may not simply be overlooked.

[Interim resume: From this position the modernist 'virtue' of specialization, the belief that problems and questions need to be isolated in order to deal with them properly and professionally, appears to be fundamentally flawed.]

b) *Organizational Context: Structural Coupling*

The notion of 'context' is further substantiated by a phenomenon for which Maturana and Varela<sup>68</sup> coined the term of 'structural coupling'. Trying to understand the 'mechanism' of ontogenic adaptation (as opposed to evolutionary adaptation) they were looking for a concept that would *highlight, link and reconcile* a system's *autonomy* (its *autopoietic integrity*) with its *interdependence* (with other systems and its environment). From a

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<sup>65</sup> Morin, *On Complexity*, 11; Against Morin's description of the steady state as 'fragile' Jannie Hofmeyer argues that a system in a steady state is in fact most robust and stable.

<sup>66</sup> Ibid.

<sup>67</sup> Strictly speaking complete equilibrium does not exist, for even in stable matter, such as rocks or metals, 'organizational re-shuffling' occurs on very small spatial scales (at atomic levels) or over very large time-frames (decay, erosion). However, for all practical purposes such interactions remain beyond the scope of our perceptions.

<sup>68</sup> Structural coupling is the term for structure-determined process of engagement which effects a "... history of recurrent interactions leading to the structural congruence between two (or more) systems" (Maturana & Varela, 1987, 75).

modernist perspective such a reconciliatory pairing seems impossible (for being mutually exclusive by reductionist definition). Hence modernist approaches tend to emphasize the aspect of autonomy (e.g. of the emancipated human being, the artist) in respect of living and creative systems, while overlooking the complementary dimension of dependence.

A striking example of structural coupling becomes evident when considering the global environment of the earth's atmosphere with its high levels of the potentially poisonous and highly reactive gas, oxygen. Aerobic organisms not only 'adapted' to this 'constraining condition', but (forced to 'interpret' the constraint as an opportunity) 'invented' the notion of breathing as an ingenious device of surviving and efficiently extracting energy from their surroundings. This allowed for significant evolutionary evolvments of life forms, as access to high levels of energy enabled faster metabolisms. Our lungs (and by implication our large brains with their high energy consumption) reveal our structural coupling to earth's specific atmosphere. During every moment of our lives they have to maintain a connection to our environment, which is crucial to our very existence. Yet nobody considers the atmosphere (or the lungs) to limit human autonomy. Rather, the common conception is that they in fact grant and enable our autonomy.

Structural coupling therefore once again suggests conceiving the environment as part of a bigger, 'nested structure consist[ing] of other structure-determined systems that are themselves changing through their own processes of structural coupling'.<sup>69</sup> It aptly circumscribes the nature of non-linear, yet structurally relational and interpenetrating ecological interactions. I posit that the intrinsic 'openness' of systems should be conceived on this level. It is an implicit, indirect, 'covert' openness, not immediately and superficially evident, non-linear and non-predictable (who could have foreseen the evolution of the lung!?) but undeniably manifesting in complex structural relations.

[Interim resume: I posit that Modernism's underlying disinterest<sup>70</sup> with regard to all 'dimensions of environment'<sup>71</sup> result from fateful oversights such as the one explicated just now. It would be an important conceptual advance, if the complex and *mutually constitutive* tension between autonomy and dependence unveiled by cognitive biology would be recognized in the political, sociological, economic and the artistic realm. This could lead to much more 'balanced'<sup>72</sup> understandings of relations (individual in society, consumer in an economy, artist in a culture, etc.) as concurrently autonomous *and* dependent, creative *and* responsive, responsible towards one's own integrity *and* that of one's own surroundings, 'free' to engage *and* 'bound' to engage.]

### c) *Evolutionary Context: The Survival Unit*

Yet another way of framing a principal contextual relationship is suggested by Gregory Bateson's hypothesis of the 'evolutionary unit',<sup>73</sup> also sometimes called the 'survival unit'. Deducted from empirically proven negative consequences observed in an ecological context, an important systemic relationship is confirmed here.

Bateson's argument departs from an 'error' that he perceives in the 'identification of the unit of survival

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<sup>69</sup> Maturana & Varela, 75.

<sup>70</sup> This attitude is perhaps most shamefully evident in the notion of 'consumerism' and its double excesses of exploiting and wasting.

<sup>71</sup> Here the term 'environment' may broadly encompass anything: ecosystems, natural, mineral and human resources, any foreign cultures, concepts, ideas – in short, any aspects 'outside' of controllable and predictable 'solutions'.

<sup>72</sup> Here 'balance' does not imply a compromised reduction, but a 'complex' enrichment.

<sup>73</sup> Bateson, *Steps to an Ecology of Mind*, 457.

under natural selection.<sup>74</sup> In Darwinian evolutionary theory this unit is always considered to be either ‘the breeding individual or the family line or the subspecies or some similar homogenous set of conspecifics.’<sup>75</sup> However, as the ultimate ‘Modernist application’ of this Darwinian principle in its current guise of global capitalism shows, ‘if an organism or aggregate of organisms sets to work with a focus on its own survival and thinks that that is the way to select its adaptive moves, its “progress” ends up with a destroyed environment.’<sup>76</sup> It follows logically that ‘if the organism ends up destroying its environment, it has in fact destroyed itself.’<sup>77</sup>

Clearly then the ‘evolutionary unit’ – the entity that would truly safeguard an organism’s survival and sustainable adaptation or evolution – must be framed somewhat differently. In nature, the genetic variety of wild populations principally expands such a unit, ‘potentiality and readiness for change [being] already built into the survival unit’.<sup>78</sup> Yet, even more importantly, the changing environment itself must be included into this unit: ‘The unit of survival is a flexible organism-in-its-environment.’<sup>79</sup>

Bateson’s quotes are taken from a paper that he presented in 1970. His suggestions have long since been integrated into the canon of ecological and complexity thinking. Though compelling and urgent, they are still tragically disregarded in disciplines such as the musical profession for example, that in this respect remains deeply committed to nineteenth-century Darwinism. In this field the accredited ‘survival units’ remain tightly closed sets of homogenous conspecifics of an ever more commoditized nature: exclusively selected professional music-making (i.e. exclusive, competitive), musical practices and conventions proclaimed to be generic, international and naturalized (thereby supplanting traditional, local, indigenous practices), a closed canon of masterworks (exclusively promoted to the detriment of all alternative repertoire), the protected (hermetically sealed off and sound-proof) environment of the ‘conservatory’, etc. These strategies have become institutionalized conventions, adamantly defended by Modernist conviction that they represent ‘the best solutions’ to safeguard the quality and standards of musical practice and education.

[Interim resume: In order for music to survive (music that is, as a vibrant and vital emergence, not merely institutionalized and conventionally administered simulacrum), its evolutionary units must be considerably expanded. As it stands currently, ‘classical’ musical institutions generally exclude what could be crucially important, namely nourishing contexts: Indigenous music, folk music, contemporary and experimental music, period music (of lost or interrupted performance traditions), informal, occasional, spontaneous, lay music making. If narrow musical conventions end up destroying musical environments, they are destroying themselves.]

## Conclusion

What I hope to achieve with this talk is to sketch an epistemological framework within which I believe it to be possible to address even very complex musical questions and challenges in a constructive manner. I trust that the promise of ‘hopeful reflections’ is thus fulfilled, even without offering any specific solutions to pressing questions. However, in closing I must refer to the context in which all of this has been said in some more detail. While it is not exactly possible to take the bull by its horns, I resort to taking the elephant in the room

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<sup>74</sup> Ibid., 456.

<sup>75</sup> Bateson, *Steps to an Ecology of Mind*, 457.

<sup>76</sup> Ibid.

<sup>77</sup> Ibid.

<sup>78</sup> Ibid.

<sup>79</sup> Ibid.

by its tusks. I refer to a deep schism in Stellenbosch University's Music Department that has been the cause of on-going conflict and recently even led to an institutional disintegration.

This local case of severe polarization can be referred to two distinct disciplinary positions, often referred to as Old and New Musicology. Broadly outlined the former position considers music primarily as *cultural canon* to be safeguarded by a tradition of crafts and customs, which supposedly have become naturalized globally. It is historically orientated and attaches cultural value to normative standards, therefore privileging the conservation of such standards and practices. The latter position views music as *social practice*, contingent on local circumstances. It attaches more value to the diversity of actual contemporary music practices, emphasizing a perception of music as a *means* of expressing social and political experiences, rather than an *end* in itself.

Clearly both sides pursue rather different goals that potentially complement each other well. But a conflict arises over the definition of 'what music is' or should be. If both sides consider their definition to be exclusive and comprehensive, there can be no room for other perceptions. In a small music department with scant resources to be allocated either to the one or the other pursuit, the conflict has escalated and taken on existential dimensions.

From my complexity perspective I'd like to offer the following commentary:

Fighting over a definition of music from a modernist either/or position is futile. What we are witnessing is the failure of modernist thinking to do justice to musical complexity. Modernist engagement – represented by professional approaches (read: specialized, isolated approaches), reductionist thinking (reducing music to one core idea, one master narrative) seeking an uncompromising solution can only arrive at antagonizing positions. Tragically it will cause conflict, without even doing justice to the intended musical quest.

The reason for this is that music cannot be tied to a single concept. Its complexity defies a categorical definition. With regard to the conflict under discussion it clearly is both a *cultural canon* as well as a *social practice*. In fact, it can only be the one by virtue of also being the other – Morin's definition of 'concurrently antagonistic and complementary' applies. Both conflicting parties have a point, but both have drawn the boundaries of their survival units rather too narrow. I predict that neither will survive without the other.

What is required for a thriving music department is the 'steady state' of a productive and dynamic disequilibrium. This will require on-going negotiations about fruitful interactions of parts and wholes.

The new *Open Africa* initiative represents a case of creative transgression of the boundaries of the traditional Conservatory. It is inherently part of that system – perhaps its most relevant part under the circumstances – and should under no account be ostracized! The Conservatory – as the name says all too well – represents the conservational structure, broadly maintaining the integrity and functionality of the system. Without such a structure, *Open Africa* can hardly be more than an idea. *Vice versa*, without creative ideas like *Open Africa* the conservative structure might become an empty shell. Both prospects are dire and should be prevented at all costs.

I am well aware that previous interventions to this effect have dismally failed for having underestimated the complexity of the challenge. This has directly affected me, as my own work has become a collateral victim of the prevailing antagonisms. It is all the more tragic as I am convinced that the complexity approach it endeavoured to flesh out, could have guided a more circumspect process of cutting through to the constitutive complexity of relations, rather than merely revealing their destructive contentiousness.

Immense damage has been caused by a protracted state of warfare within departmental circles and many

opportunities have irretrievably been lost. The current student protests – though perhaps misguided in many ways – should be seen as an urgent wakeup call that it is necessary to uphold scholarly integrity in a contextually relevant manner. It should go without saying now, that neither *integrity* nor *relevance* can be sacrificed, but that they have to be thought of as complexly related – concurrently antagonistic and complementary.

I offer these reflections in the hope that they may in some way contribute to define the notion of contextual integrity.

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