ANALYSIS OF JAZZ

A COMPREHENSIVE APPROACH

LAURENT CUGNY

American Made Music Series

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TRANSLATED BY BÉRENGÈRE MAUDUIT

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PREFACE

Why analyze jazz and why write a book called *Analysis of Jazz: A Comprehensive Approach*? The first answer is pragmatic: because one does analyze jazz. Musicians do, and others too. All types of music require some degree of reflective activity. Developing as a musician involves understanding music as it stands when one learns it but also as it was before, and understanding is an active process that one may at least momentarily associate with the process of analyzing.

It is not possible to perform music at all without a certain degree of analytical activity. However, it would be a mistake to limit analysis to such a basic mechanical function of learning sets of codes and techniques. Analysis is not merely a practical tool for producing music. It involves culture as well. It is a way to become better informed about the practices of music and thus to become a more sophisticated listener and/or performer. Analyzing the different sorts of music that exist allows us to get a sense of a certain spirit that may well run through them all, something that would be at play beyond procedural elements such as notes, codes, rules, and techniques.

Musicians are not the only ones involved in music analysis. Musicologists—whose purpose is to understand and discuss music without necessarily playing it themselves—practice it, too. It is also potentially of interest to all specialists whose area of expertise may at some point involve music: historians, art historians, sociologists, ethnologists, anthropologists, pedagogues, economists, etc.

Finally, unless one believes that it is possible to listen to music merely for pleasure and without engaging our memory at all, which is highly unlikely, one must admit that all listeners are analysts to some extent. Listening is always an active process; it may not involve questioning but it always involves remembering, comparing, and listening again.

Analyzing is thus an activity dependent on the nature of the object to be analyzed. While analysis will focus on a unique piece of music (live or recorded), it will simultaneously be mindful of the specific and general musical context within which the piece exists. So this musical context to be analyzed consists of several objects:[1] the piece being listened to, the people who are performing it, those who have been involved in its creation (most importantly the composer, in the case of composed music), the way of playing (the process of how the music is being played and not just the product being played), the genre, style or type of music

that the piece is associated with (jazz, for example) as well as music in general and possibly other objects further afield.

For at least a couple of decades the concept of essentialism has fueled a strong current of disapproval in musicology in general and in the musicology of jazz in particular. It sets out that each thing—physical object or concept—would have an alleged nature (or essence) that dictates where things stand in relation to each other without any scope for variation or change. When understood in this sense, the concept of essentialism becomes a dreadful weapon brandished as soon as the verb *to be* is used and in whatever context. Not only does this attitude elude the philosophical history of the concept (which is actually endowed with more meanings than this particular one) but it also often tends to confuse essentialism with naturalism. The latter is a different concept that has been used in history to justify many indefensible things. Once we ensure that the differences between the two currents are made clear, I see no reason why the nature(s) of jazz in our case should be a taboo. It is thus possible to envisage that, through the many-faceted process of analyzing jazz, we may touch on the question of its essence and feel free to contribute to the debate about it.

For it is certain that jazz exists. The considerable amount of performances, conferences, publications, and academic discussions that relate to it explicitly (by use of the word in their titles) gives enough evidence of it. Equally, the fact that many musical practices (especially among improvised music) do not want to be confused with jazz shows that something exists that has a history and customs, which is seen as jazz but which does not cover everything. That is to say that all music is not jazz. In other words, jazz is a field with boundaries; it begins and ends somewhere, though it is not always easy to determine exactly where these boundaries are. It is thus justified to ask ourselves questions about the existence of jazz and what it is. And if this leads to questioning its nature(s), whether relative or absolute, so be it. I would go as far as saying that all this work would be a bit pointless if we did not allow ourselves to go there on principle.

Not that we expect analysis to answer all these questions. But equally there is no reason to decide beforehand that an analysis should only deal with the surface of things, the purely material elements of jazz. If it was merely an exercise of musical rhetorics, it would not be worth spending so much time doing it. So one must admit that analysis has prospects beyond the material surface of music and that it may reach further.

How does a jazz piece work? How can we analyze it? What fundamental questions does an analysis raise? This is what this book is about. The first task is thus to reflect upon the nature of a work of jazz (knowing that it is sometimes argued that such a thing does not exist), its systems as well as some specific aspects of its practice.

For a long time, musicologists have been mostly interested in two main systems: written music, which is a concern for art music[2] and musicologists who work on the classical repertoire; and music of oral tradition, which is the main concern of ethnomusicologists. What about jazz? Improvisation is one of its main features but writing plays a role, too. Everything in jazz that relates to improvisation, to what is not written, is likely to be difficult to approach with the tools used by the classical tradition. But the methods used in ethnomusicology may also not always be totally effective for the links between jazz and the communities in which it was born; also, the original social contexts in which it was practiced grew much broader as jazz developed. Like art music, it has become a type of music with a tradition comparable to the classical one, a music that is learned, played, and studied worldwide. Of course it is possible to look at it in relation to the cultures in which it was born or the ones that practice it nowadays, but that is not the only option.

We need to think about what a true musicology of jazz would be based on, but also to try and elaborate methods of investigation that are suited to the objective. Such methods may eventually be specific to jazz, but there is much to gain in looking in the directions of both the classical tradition and ethnomusicology, for our subject matter is a mixed one. Jazz studies cannot afford to ignore existing currents of musicology on the grounds that jazz is unique. However, borrowings from other fields need to be wise and justified. As a consequence, this book does not aim to tack an existing system onto jazz at all costs. Neither does it intend to offer a "new" system. The purpose is rather first to do some methodological spadework and then to review the tools available and determine how to use them.

Having made these claims, numerous questions appear, and at least three fundamental questions may be put forward now:

1. Might the analysis of a work of jazz be limited to the analysis of its neutral level (referring to the middle term of Jean Molino's tripartitional definition[3])? Of course not. Even if we assumed that such an analysis should be possible, it seems inconceivable to ignore the conditions in which a work has been produced or received if we intend to present a comprehensive image of it.

2. What elements are significant from an analytical point of view? Using an anatomical metaphor analysis is sometimes perceived as an activity consisting of describing an invisible skeleton while looking at a body, the purpose being to unveil the "internal structures" that the eyes cannot see. An analysis can do that indeed. But what about the organs, the vessels, the flesh? Which of these elements matters most?

3. Many other questions remain, but some are probably more essential to jazz than to other musics: What is expressed and how? How are the body and the

voice being used? It has often been said that jazz is a music of oral tradition. We shall see that it probably needs to enter another category, that of phonography. We may also ask whether a "vocal" element is not strongly at play in jazz, not just in the singers of the early days, what they expressed and how they expressed it, not just in jazz vocalists that followed them, but also in all instrumentalists, and even in arrangers who, as arrangers, only produce sound via other musicians.

Reflections on jazz analysis have gradually found their place among the various possible approaches. Roger Pryor Dodge, Winthrop Sargeant, Wilder Hobson, Gunther Schuller in the United States, and Robert Goffin, Hugues Panassié, and André Hodeir in France are among the most famous founders. However, it is always beneficial to keep thinking about what analysis (and, more widely, jazz musicology) is based on. Rather than looking at jazz as a general concept, this book focuses on what makes a piece of music jazz, with the hope that it will deepen our understanding of jazz as a whole.

The first part of the book aims at defining what a jazz work is, offering suggestions based on the main features of definition and structure. The second part deals with analytical parameters. While not suggesting that an analysis merely consists of reviewing a number of parameters, it does not seem sensible to think about musicology applied to jazz without at least investigating the numerous theoretical problems raised by the use of the usual musical parameters. After having delimited our field of application (first part) and discussed questions raised by the usual parameters (second part), the third part is dedicated to the discussion of methods and problems encountered in the analytical process itself. Problems related to written transcriptions are addressed as well. The conclusion of the book considers the topic from a wider perspective, exploring the links between analysis and history.

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Part One

THE WORK OF JAZZ

Even if the problematics of ethnomusicology are different, the bulk of the points mentioned above seems to apply to jazz as well. Like for ethnomusicologists, besides the scientific need for transcriptions, they play a special part in the work of jazz analysts: it can convey pleasure and be a way of showing one's ability to grasp the music, i.e., it can be a means to establish one's authority and show or feel a sense of belonging in the community of that music. These factors do not diminish the value of transcriptions, which, as a fact, have proved themselves to be one of the preferred tools for jazz analysis over time.

CHAPTER 12

Procedures 1: Analyzing an Improvised Solo

We are now at the point of looking at how to proceed with analysis itself. The analysis of improvised solos is by far the most common type of analysis in jazz, and for a long time there was very little analysis apart from that. Yet, Lawrence Gushee said in 1977:[1] "There is no commonly accepted coherent method of jazz analysis."[2] The way in which the author merges the analysis of jazz with the analysis of improvised solos is very revealing about the importance of the latter. For a long time, it was perceived as the only type of analysis specific to jazz. This is not surprising considering solos seem to display all the elements of which jazz is made (improvisation being the most obvious).

1. TYPES OF IMPROVISED SOLOS AND TYPES OF ANALYSIS

Improvised solos, as an object, were an obvious choice for analysts. However, the analytical methods used lacked theoretical backing and were always quite empirical. Nevertheless, a number of significant authors have contributed pieces that have gradually allowed theory to develop organically, but the theoretical jigsaw puzzle is still incomplete.

It is not always easy to present the authors' views in relation to each other, because they sometimes use the same words with different meanings, look at things from different angles, and do not always talk about the same object (or define it in the same way). However, it seems to me that five types of questions emerge from reading the texts, though not always explicitly.

1.1 Protagonists and Points of View

"How do improvisers proceed?" is the most frequently asked question when people start considering the issue. Answers given involve unveiling alleged methods of improvisation used by soloists, but a closer look at these answers reveals that several points of view can sometimes be confused. In my opinion, it is worthwhile to bear in mind that there are three angles of approach: the improvisor's (poietic approach), the analyst's (analytical approach), and the listener's (esthesic and perceptive approach).[3]

The improviser: He/she carries out strategies of improvisation (being aware of them to varying degrees) and may use improvisational methods.

The analyst: He/she tries to decipher what the improvisation consists of based on the final product (in this case, an improvised solo as it is presented on record). He/she tries to identify the strategies and methods of improvisation at play.

The listener: Listeners perceive a solo in certain ways (and are aware of it to varying degrees). Analysts are listeners first, obviously (and so is the improviser to some extent), but not all listeners listen with an intent to analyze the data they are presented with.

One could think that a choice of strategy carried out by a musician should lead to a certain type of analysis. Authors sometimes confuse the two for that reason: allegedly, analyzing consists of unveiling the method used. However, we will see that the link between the two is often more complex than that. Besides, the analytical positioning may also be affected by the choice of whether to include how the work was received by listeners.

1.2 The Solo from Within: Elaboration/Syntagmatic Chain

Various authors refer to two (or three) types of elaboration of an improvised solo more or less implicitly:

Combination: the soloist stitches together units that are not related to each other in principle.

Development: units are stitched together according to a logic. There are two solutions: 1. Each unit provides possibilities for the next ones, in which case each is to be understood in relation to the previous ones (and the following ones if we are dealing with the achieved state of the solo, which is the case for the analyst); i.e., development is iterative. 2. Some authors consider development to be led by its own inherent logic, a deep structure that unfurls on the surface. For them, development is organic.

From the point of view of an improviser, these are methods of elaboration. From the point of view of an analyst, these are different types of syntagmatic chains (i.e., different ways of assembling units into a chain).

1.3 The Solo from Outside: Points of Reference

Both the improviser as he/she elaborates the improvisation and the analyst as he/she attempts to decipher it can refer to elements that are not part of the solo itself. These elements may be of two sorts:

The head: in common practice the head is played before the solos, which are based on its chord changes (and thus its structure). There may be three sub-elements involved:

- The head's harmony
- The head's structure
- The head's melody (which may be present in varying degrees or not at all in the solo)

The vocabulary: soloists (in their practice) and analysts (in their search) may refer to a body of vocabulary. Again, there are two options that are not mutually exclusive:

- Individual vocabulary: the soloist's own idioms or borrowings from other improvisers (influences)
- Collective vocabulary: idioms related to a style

1.4 Melodic and Rhythmic Units

The concept of motive, which may become a formula under certain conditions, is recurrent in the literature. It is very difficult to deal with because authors use these terms with very different meanings. For that reason, a momentary definition of a "motive" is needed: let us say that it is a melodic and rhythmic fragment that can be appreciated differently depending on its place in a syntagmatic chain or what it is related to:

Syntagmatic Chain:

- A motive can be seen as an element combining with other elements of the same nature, i.e., other motives (combination).
- Most of the time, a motive is seen as a melodic fragment to be used and transformed by the solo. It involves development within the solo and does not rely on any other element outside of it.

Referent:

- The motive can refer to the head that is played before the solo takes place and provides it with the chord changes. In this case, the motive is a thematic marker.

- The motive can refer to the vocabulary of the musician using it, in which case it becomes a marker of that musician's musical language. It is then often called a "formula." This is the meaning of a "Parker style formula" or "Young style formula," etc.
- A motive can refer to the vocabulary of other musicians (intertextual dimension).
- It can refer to a collective vocabulary, in which case it becomes a stylistic marker.

This inventory of references does not actually list different objects but rather occasional functions that melodic and rhythmic fragments can have. A fragment may play any of the roles mentioned above simultaneously or in turns. A single motive may come from the head while belonging to the vocabulary of the improviser (especially if he/she composed it) and be used as a marker by a collective style.

1.5 Degrees of Awareness in Elaboration and Reception: The Conscious Intent

One may be aware of the presence of references in varying degrees and at different levels of consciousness. This is a crucial point. Here is not the place to go into the complex discussion about the kind of mental processes at work in improvisation and how they relate to various levels of consciousness. However, improvisers are certainly aware of using certain strategies, and it is also clear that their activity involves various levels of consciousness. The same applies to listeners. As for analysts, they are meant to be fully aware of the strategies that they use while not forgetting that they are listeners before being analysts.

Authors use these notions (though not always explicitly) to develop their thoughts about what is often presented as methods of improvisation (sometimes building on other authors' ideas). When summarizing, we shall see that it would be more appropriate to talk of the features of improvisations. It is not always possible for analysts to identify a simple correlation between the conceptual intentions and improvisational strategies/methods used and the actual result related. This is why the conscious intent that lies behind an improvisation and that is mentioned above matters so much. Besides, this book is concerned with analysis, not pedagogy. As a result, our aim is to understand how something is, rather than exactly how it was made (in order to be reproduced in a pedagogical perspective) even if the two are often related.

Here is the list of methods that have been identified by authors over time. The first draft presented below gives a momentary short definition of each method so that the reader is not confused by the terms when they are used with varying

meanings from one author to another. A more refined version of this list will be given in the summary at the end of the chapter.

Methods can be grouped in two categories depending on whether or not they refer to the head:

In reference to a head:

- Paraphrase: repeat of the head with slight variations (embellishment, ornamentation, marginal changes in pitches and rhythm);
- Schematic improvisation: based on the structure of the head;
- Thematic improvisation: the head is merely being referred to in various possible ways.

With no reference to the head:

- Motivic improvisation: progression and/or variation of motives;
- Formulaic improvisation: based on a vocabulary (generally the improviser's own) that can be found in other solos;
- Semiotic improvisation: a way of building a solo, of staging it and giving meaning to it.

It is worth making a final remark before starting to observe how each of these featured improvisations has gradually been studied and conceptualized. Analysis strictly based on parameters (harmonic, formal, melodic, and rhythmic) appear a lot more descriptive than the others (motivic, thematic, schematic, formulaic, and semiotic). Whether they include external references or not, the latter categories still go a step further in analytical terms. This step probably involves testing a greater range of hypotheses about the processes, strategies, or methods used by improvisers, and the task of analysts lies in unveiling and describe these. We are not saying that such analyses are better than those in the former category but they certainly have a broader scope.

2. A BRIEF REVIEW OF THE WORK OF TEN AUTHORS[4]

These are the authors (in chronological order of contributions) whose texts have been considered:

Roger Pryor Dodge (1934)[5]
André Hodeir (1954)[7]
Alfons M. Dauer (1969)[9]
Thomas Owens (1974)[11]
Barry Kernfeld (1995)
Winthrop Sargeant (1938)[6]
Gunther Schuller (1958)[8]
Frank Tirro (1974)[10]
Lawrence Gushee (1977)[12]
Henry Martin (1996)[13]

Most authors intend to identify methods of improvisation. Despite being in an analyst's position, they try to understand how improvisers proceed (i.e., how the poietic level operates), and what methods and strategies they use. Clearly there are limits to this way of investigation, as expressed by Henry Martin about the varying degrees of intention and awareness at work in improvisational strategies. Not only do improvisers use several methods either in turn or simultaneously but, most importantly, all the strategies do not operate at the same level of consciousness. As a result, the relevance of this approach is questionable for an analyst who, as such, is trying to decipher a musical result or product (even if this product results from an improvisational process). The same problem exists, at least partially, if we consider a writing process instead of an improvisational one.[14]

This is why, once again, from an analyst's standpoint it seems to me more appropriate to identify features in improvisation. An improvised solo displays certain typical features that vary in number and importance. Some of these features involve a conscious act by the improviser or points of reference, while others do not. Here is a suggestion of an inventory of twelve categories of features, largely (though not exclusively) based on the notions defined earlier—sometimes in contradictory terms—by the authors mentioned above. An appropriate analytical take on solos can reveal the features of which these types are composed.

Motivic Features: the developments that may occur in a solo, based on one or several melodic cells identified as motive(s). This is normally a conscious process.

Formulaic Features: using and combining patterns that are specific to an improviser. This may be done more or less consciously or unconsciously. It refers to the vocabulary of an improviser, a group, or a style.

Thematic Features: a potential reference to the melody of the head. This may be done more or less consciously or unconsciously.

Schematic Features: referring to the structure of the head, normally in a conscious way. The structure of the head is thus the point of reference, though the structure of the arrangement may join in or take the place of the structure of the head.

Semiotic Features: the ways in which meaning is produced in a solo, the building of it as a narrative ("telling a story"). Such processes are usually conscious.

Voice Leading Features: the way that, potentially, strong structural points influence how the melody unfolds.

Interactional Features: the ways in which the soloist interacts with the other performers: other soloists, rhythm section, orchestra.

Intertextual Features: the connections to texts other than the head: the "repertoire" in general, but also solos by other improvisers who are not taking part in the performance in process.

Harmonic Features: the (usually conscious) reference to harmony (the head's in the case of the common practice). The chord changes are the point of reference.

Melodic Features: all melodic elements. Voice leading may be included even if it also relates to harmony (the harmonic function of notes considered structurally important).

Rhythmic Features: all rhythmic elements. It is impossible for the improviser not to take the rhythm of the head into account (even if it may be only the tempo). However, it seems fair to consider that the rhythm of the head does not constitute an external point of reference.

Sound Features: all aspects relating to sound.

Paraphrase, as used by André Hodeir, does not appear on this list because it is genuinely a method. However, it is easy to see where it could fit into the realm of thematic features.

As said before, the fact that improvisers may combine several strategies and that these features described may be observed simultaneously is a difficulty. It is also sometimes difficult to distinguish between them. A motive developed in a solo may come from the melody of the head while being an element of the common vocabulary of an improviser, in which case the improvisation displays motivic, thematic, and formulaic features all at the same time. Besides, most of the time an improviser takes the harmony of the head and of its structure into account. Consequently, all solos in the common practice display harmonic and schematic features. Also, there is a semiotic dimension in all solos in the sense that even the least well-constructed and inconsistent of solos makes some sense and "tells a story," however messily.

This leads to a corresponding list of types of analysis:

Motivic Analysis: analysis of the development of a solo based on motives.

Formulaic Analysis: analysis of patterns and fragments heard in other solos by the improviser and thus considered part of his/her vocabulary. It may involve patterns drawn from another vocabulary, that of a style in particular.

Thematic Analysis: analysis of the ways in which a solo refers to the melody of the head.

Schematic Analysis: analysis of the ways in which a solo refers to the various structural levels of the head.

Semiotic Analysis: analysis of the ways in which meaning is produced and a narrative built ("telling a story") in a solo. Mapping dynamic and emotional intensities is an important part of this.

Analysis of the Voice Leading: analysis of the contrapuntal evolution of the voices in relation to a harmonic and potentially functional background.

Interactional Analysis: analysis of the ways in which a soloist responds to the suggestions made by other performers.

Intertextual Analysis: analysis of the references to texts other than the head or past solos by other improvisers.

Harmonic Analysis: analysis of the ways in which the ongoing harmony is referenced in the solo.

Melodic Analysis: analysis of melodic shapes and morphology.

Rhythmic Analysis: analysis of the rhythms/polyrhythms used.

Sound Analysis: analysis of sound qualities and variations.

It is worth noting that no stylistic feature (referring to a style of jazz or type of music, like blues for example) appears here, though a formulaic analysis could include it. This is because I believe such features should be seen as extensions of an analysis rather than as part of the analytical process itself, even if it is clear that stylistic features are at work in improvising. However, it seems to me that the identification of these features takes place at a later stage on the basis of the features observed in the list above.

The results may now be summarized in the table and scheme below:

TABLE 9. RECAPITULATION OF FEATURES AND METHODS

Feature/Type of Analysis	Referent	Parameter
Motivic		Melody
Formulaic	Vocabulary (of the improviser, of a style)	
Thematic	Tune of the head	Tune
Schematic	Structure of the head	Form
Semiotic		
Voice leading		Melody—Harmony
Interactional	Other performers	
Intertextual	Other texts	
Harmonic	Harmony of the head	Harmony
Melodic		Melody
Rhythmic		Rhythm
Sound		Sound

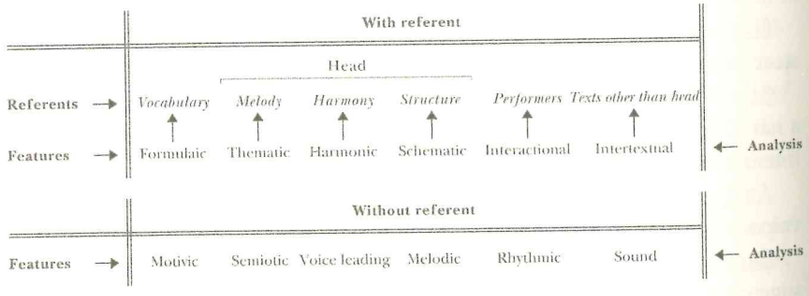

Fig. 12.1. Recapitulation of features and methods

CHAPTER 13

Procedures 2: Theories and Methods Applied to the Analysis of a Work of Jazz

While improvised solos undeniably constitute the main focus for jazz analysis, there are others. We shall look first at theories drawn from the classical tradition before considering the methods designed specifically for jazz, otherwise qualified as "native." In both cases we will examine results already produced by some of these methods before suggesting possible directions for future analysts to take. Finally, we will review a few tools that could prove useful.

1. IMPORTED THEORIES

For quite a long time improvised solos have been the main, if not sole, object analyzed in jazz. Since the 1970s (and notably during the 1980s) the field has extended considerably, in particular due to the importation of theories and methods that originally devised for classical music. Jean-Jacques Nattiez recommends making a distinction between two main groups of analyses of musical structures, one based on taxonomic models and the other on linear models.[1] The dividing line between the two groups could also be drawn based on those that start from the premise that there are deep structural levels and those that do not. This reveals two approaches that have been applied to classical music as well as jazz, for jazz has partly followed in the footsteps of classical music. How relevant are the analytical methods scrutinized in relation to an object whose tonal nature is variable? Also, how is the specific jazz quality of our object taken into account by these methods? The most representative theories of these two groups, Schenkerian analysis and semiological analysis, will be given consideration first. Then analysis inspired by Rudolph Reti (which could be seen as belonging rather more to the first group) will be reviewed, along with an application drawn from the

information theory and a transposition of the set-theory for non-tonal music. Jan La Rue's style analysis, which is an approach rather hard to classify (possibly because it has no theoretical ambitions and merely aims to propose an empirical tool), will then be considered.

1.1 Schenkerian Analysis

The most influential of these theories, produced by the musician and musicologist Heinrich Schenker (1868–1935), presents itself as a theory of musical works that might be universal.

The whole theory cannot be summarized here. However, let us recall that it is entirely based on the concept of "fundamental structure," described as follows by Nicolas Meeùs:

> The *fundamental structure* is a perfect triad that represents an artistic rendering of the harmonic series. However, this chord cannot be used as it is partly because it cannot be produced by human voices. It will therefore be presented in two contrapuntal lines. The lower line consists of the *bass arpeggiation:* an arpeggio going up from the root to its fifth and back down to the root; the upper line consists of the *fundamental line*, which is a melodic line descending stepwise from the third, the fifth or octave of the chord to the root. From then on the fundamental structure encapsulates the whole composition in embryo: the music unfolds through time; it is both contrapuntal and harmonic; it adds the passing notes to the notes of the triad in order to complete the *fundamental line*; it expresses a tonality.[2]

To the best of our knowledge, Steve Larson is the first to have envisaged the application of Schenker's theory to jazz in his 1987 PhD thesis.[3] One of his papers on the subject published in 1998 starts with a number of questions:

> In general, three questions have been raised about the applicability of Schenkerian analysis to improvised music:
>
> 1. Is it appropriate to apply to improvised music a method of analysis developed for the study of composed music?
> 2. Can features of jazz harmony (ninths, elevenths, and thirteenths) not appearing in the music Schenker analyzed be accounted for by Schenkerian analysis? and
> 3. Do improvising musicians really intend to create the complex structures shown n Schenkerian analyses?[4]

All of Larson's answers to these questions are entirely positive. With regard to the first question, Larson highlights the similarities rather than the differences between improvised and composed music. In particular, referring to alternate takes when they are available, he argues against the idea that composed music is more carefully crafted than improvised music. I would add that even when such takes do not exist, improvisation always involves labor directly or indirectly. Larson also believes that, in both cases, the surface that we perceive is based on a work's underlying structure, from which it is derived through transformational processes.

This statement lies behind Larson's answer to the second question: dissonances are better explained horizontally than vertically, and this is true for jazz as well as classical music.

The third question brings back the debate on process versus product. Steve Larson strongly believes that analysis aims to understand the product and that the intentions of the producer are not always helpful in achieving that. He backs up his statement, and rejects the idea that the real time of improvisation makes the elaboration of the complex structures and transformations unveiled by Schenker impossible, quoting this striking extract from an interview between Bill Evans and Marian McPartland recorded in 1978:

> [Bill Evans]: What the student should keep in mind is having a complete picture of the structure, as he is playing then indicating it.
> [Marian McPartland]: You mean of the tune?
> [B.E.]: Well, of the tune and also of the structure as he wants to indicate it.
> [M.McP.]: You mean pre-planning in a sense?
> [B.E.]: Yes, pre-planning a basic structure. I always have, in any thing that I play an absolutely basic structure in mind. Now, I can work around that differently or between the strong structural points differently, or whatever, but I find the most fundamental structure, and then I work from there.
> [M.McP.]: When you say structure, you mean, like, one chorus in a certain style, and . . .
> [B.E.]: No, I'm talking about abstract, I'm talking about more abstract architectural thing, the theoretical thing.[5]

Bill Evans then plays "A Touch of Your Lips" while explaining how he proceeds. Steve Larson thinks (rightly, in my opinion) that this recording proves that the transformation of a fundamental structure is possible in real time. Larson goes on analyzing the transcription of this piece using the Schenkerian method and shows that Bill Evans really does what he is explaining, proving that the voice leading is anything but random.[6]

His argument is convincing. But other objections may be raised than those involved in the three initial questions asked. Steve Larson himself suggests possible limits to the method. In particular, he fears that it might attribute to the voice leading (which is the prime aim of the method) processes that the instrumental *topos* or the formulaic vocabulary of a musician (here, Bill Evans) might actually be responsible for.

The most obvious criticism, which Schenker's theory also had to face in its time, claims that the method can only be applied to a body of works that practices tonality in a strict enough manner for the theory to be able to operate. The argument is particularly relevant considering the theory claims to operate universally (something Schenker may have believed). However, Steve Larson does not think so, and gives a list of features identified in modern jazz of which a Schenkerian analysis would struggle to give an account.[7] Generally, the objections raised involve not only the difficulties the method shows in dealing with certain aspects of some tonal practices but also the fact that the method is based on pitches only and possibly reduces a work to this parameter. Perhaps the specificity of jazz lies not precisely—or not only—in its treatment of tonality or harmony in general but rather of rhythm and sound, which Schenkerian analysis does not take into account. Célestin Deliège has dealt with this objection to the theory in general (not specifically about jazz):

> Schenkerian theory has faced, and still faces, important reproaches: it neglects rhythmic, melodic, and metrical aspects; Schenker's theory is based on the harmonic system and he subjects all other variable parameters to it. . . . Personally, I find such criticisms to be of secondary importance: rhythmic and metrical aspects are constantly implicated even if they are not dealt with explicitly. As for the status of harmony, it is a fact that it prevails over melody and defines the pitch theory in the tonal system.[8]

Beyond these arguments, I believe that the debate does not need to exist if we accept that an analytical method does not necessarily aim to account for everything that contributes to a work. It is already a satisfying result and a worthwhile process if it succeeds in accounting for some aspects. Steve Larson does not address the question directly in this article but touches on it when asking himself whether the music of Bill Evans is particularly well suited (possibly too well) to Schenkerian analysis.[9] Even if that were the case, it would already be a valuable result. Also, it would clearly be naive to imagine that such an important pianist could be an isolated case; he would have been influenced by the musical milieu around him and would have influenced others, too. However, Larson goes further and doubts that the Schenkerian method could apply to everything that Evans played.[10]

One could argue that some of the notes played by Evans may not fit the Schenkerian analytical framework because as he was playing them he was not within the boundaries of the system that the method can describe. This may have been an active choice on his behalf or else an involuntary outcome, perhaps because what he was attempting had actually failed. In this scenario, the method can be used as a measuring tool rather than a conceptual system, the validity of which can be confirmed or destroyed at every moment.

The theory faces another criticism that is linked to one just discussed: if the theory is only relevant for the tonal repertoire, then it only proves what we already know about that music. Nicolas Meeùs notes that this argument can be turned around: even if it is the case, the theory is still a precious tool for the identification of phenomena; also, the Schenkerian theory renews the way that counterpoint is analyzed.[11] This has particular implications for the analysis of jazz. Indeed, counterpoint is not easily analyzed in jazz. In my opinion this is because it is not part of the jazz tradition. To be more precise, it is left to pianists (when they improvise) and arrangers (when they write) to deal with the realization in their own ways. The domination of harmonic analysis over voice leading is very striking in jazz. The nature of Schenkerian analysis itself is an opportunity to even out this lack of balance.

Finally, the general view underlying Schenkerian analysis considers a work as a development, so in a dynamic perspective. This fundamental statement may prove very beneficial for jazz analysis, too. In this respect, I generally agree with analysts who recognize the value of the theory for the idea behind it more than they dislike it for the problems that a strict application may bring up. It is clear that the step made by Henry Martin in the debate over improvised solos has completely changed the perspective on the subject. Steve Larson's contribution to jazz analysis also seems crucial, even if the generalization of Schenkerian analysis has not brought an end to the debate yet.

1.2 Semiological Analysis

Semiological analysis in some ways represents the opposite take on analysis: it is based on a "horizontal" view of the surface under which there is nothing to discover. As a result, the fundamental question consists of establishing the way to dissect this surface and to break it down into units with a view to build a taxonomy.

Taxonomy is at the heart of the semiological approach. However, according to Jean-Jacques Nattiez there is a radical difference between semiology and structuralism in how they go about building taxonomies: the latter postulates the intrinsic meaning (or immanent quality) of its object, while semiology considers a work in a more extensive manner. It takes into account the stages that precede and follow the object (or text) itself: the production stage and the reception stage.

Hence the ongoing reference to Jean Molino's tripartition, which identifies three levels at which an object can be considered: The poietic level considers a work from the viewpoint of its production; the neutral level (or immanent level) deals with the mere material content of the work; the esthesic level involves how the work is received. However, the analysis of the neutral level remains the most important part of the process.[12]

Nattiez never refers to jazz as such. I believe that Denis-Constant Martin and Didier Levallet's study of Charles Mingus's "Fables of Faubus"[13] is the only explicitly semiological analysis ever carried out in the field of jazz. The corpus considered consists of fifteen versions of that piece recorded by the composer and, in particular, four versions recorded in April 1964 during a tour when Eric Dolphy was in the group.

Musical semiology is more an approach and a general attitude toward a work than a method that comes with a toolbox. In fact, once analysts have agreed to the general semiological frame of thought, they are left to their own devices and choices as to the ways of carrying out their analysis and appreciating outcomes and possible extensions of the results. Nattiez possibly sums up this open-mindedness in these terms:

> Musical semiology does not ask radically new questions compared to "traditional" approaches. It stills wonders what a work is made of, what its form and theme are, how it develops and from which generating cell it stems, what its stylistic features are, etc. Musical semiology as we understand it deals with issues brought up in the past but it constantly questions the methodology that lies behind an analysis (its own methodology as well as that of others) and does it under the influence of linguistics in particular.... It is more demanding with regards to the ways of defining the phenomena that are considered as relevant in a work and to the nature of the models used to give an account of its organization. As a *critical framework*, ... musical semiology looks into the elements selected by other musicologists in the musical material, the ways in which this selection is made, the ways in which they talk about it and on which basis.... As a *programme of analysis*, it addresses each of these questions and tries to give verifiable and rigorous but certainly not definitive answers to them.[14]

1.3 Information Theory

As early as 1979, Keith Winter published an article titled "Communication Analysis in Jazz," in which he analyzed two solos by Louis Armstrong (in "Beau Koo Jack," 1928; and "Big Butter and Egg Man," 1926). He carried out a thorough

and systematic examination of the distribution of pitches, using numerous tables and graphs.

> The processes involved in the communication between the improvisator and his audience play an important part in the shaping of the music which is played. The way in which the performer presents his ideas can be looked at in syntactic terms but this form of analysis often fails to bring to light some of the most basic features of the music. This paper describes some simple methods of analyzing the reductive information structure of a jazz solo. In simple terms the reductive information variation with respect to time describes the relative difficulty which listeners experience in perceiving the music during the course of a performance. Although some important observations on the playing of Louis Armstrong are made as a result of the analyses shown here, the two solos have been chosen primarily as examples to illustrate the use of the analytical techniques.[15]

Winter's method is based on Ralph Hartley's information theory—first expressed in 1926—which defines information as a measure of the number of symbols sent via a system of communication. The prevailing criterion lies in the quantity of information rather than the signification of symbols. Importantly, it seems, this theory is partly cognitive, as it involves a hypothesis about reception. With Winter, it is clear that this theory focuses on statistics rather than syntax. Here lies, in his opinion, its originality and usefulness:

> The processes involved in the communication between the improvisator and his audience play an important part in the shaping of the music which is played. The way in which the performer presents his ideas can be looked at in syntactic terms but this form of analysis often fails to bring to light some of the most basic features of the music.
>
> This paper describes some simple methods of analysing the reductive information structure of a jazz solo. In simple terms the reductive information variation with respect to time describes the relative difficulty which listeners experience in perceiving the music during the course of a performance.... Information theory can only examine the distribution of the components of music. Some analyses of classical music have shown the limitations of an orthodox application of the theory although even here much can be learnt by such a simple treatment. This paper explains and employs a number of ideas which enable the analyst to include the effects of different types of syntactic structures in simple empirical determinations of reductive information values. From these results it can be seen that reductive information is an important parameter of jazz.[16]

Is Keith Winter thinking of Eugene Narmour's "implication-realization" model without mentioning it when he talks about the "predictability analysis"? However, the author is mostly interested in the possibility of extending its application to jazz, as he believes that this type of analysis is relevant across musical genres.

1.4 Set-Theory

I believe that Steven Block was the first to apply Allen Forte's set-theory[17] to jazz, in two articles published in the journal *Music Theory Spectrum* in 1990 and 1997 respectively. In the first article, "Pitch-class Transformation in Free Jazz," he examines five performances: "Air Above Mountains (Buildings Within)" and "Tales (8 Whisps)" by Cecil Taylor; "Ascension" by John Coltrane; "489M . . ." by Anthony Braxton; and "Lonely Woman" by Ornette Coleman. In the second article, "'Bemsha Swing': The Transformation of a Bebop Classic to Free Jazz," he examines in turn two versions of Thelonious Monk's composition, one by the composer himself and the other by Cecil Taylor.

Block's primary concern was to find appropriate tools to analyze free jazz works. The set-theory offers the great advantage of making it possible to deal with groups of sounds that appear on the surface (like chords, clusters, phrases, etc.)—named pitch-class sets—as independent and non-hierarchical entities bearing no relation to an external harmonic point of reference and no predetermined function. This "neutral" way of grouping pitches also allows the comparison of these sets in a range of ways. In Block's mind free jazz is, of course, not merely about "atonalism" or "energy"; it is also about pitch choices, the setting of specific connections between pitches, and strategies guiding these choices. The notion of mode has sometimes been used in this kind of investigation, but it is an inappropriate tool because it involves the concepts of tonic or tonal center.

A perfect example of this method is the analysis of a fragment of "Air Above Mountains (Buildings Within)" recorded as a piano solo by Cecil Taylor in 1976:

> An excerpt from Taylor's "Air Above Mountains" (1976) illustrates the additive surface transformation that is typical of Taylor's improvisations . . . The passage has been divided into the three primary gestures which alternate in the music, each of which represents a different musical lexicon. The first gesture is chromatic, the second whole tone, and the third diatonic in that it is the 3–9 {0,2,7} trichord[18] arranged as ascending fifths. For the most part, each gesture is distinct and each one, as it is sounded, is permuted or reiterated in different ways.[19]

Block extracts the following results from the rest of his investigation: "The relationship between these gestures, however, is more complex than a threefold alternation and variation scheme."[20]

Here Block introduces an idea that could be added to the list of methods of improvisation described in chapter 12. A development that was motivic in the beginning may lose its motivic nature as it carries on. In the final stages, the development may go through a dramatic qualitative change, as the motive that it is based on may not be traceable anymore. This is a process of addition and/or subtraction that Cecil Taylor gives examples of.

Finally, Block delivers a general conclusion regarding the analysis of free jazz:

> The art of free jazz seems to require that the improvisers themselves steer away from arpeggiation of common chord formations and progressions and think more in terms of relationships defined by interval class; this is true in both tonal and non-tonal contexts. For this reason, free jazz has an affinity to early twentieth-century concert literature, in which composers were thinking along similar intervallic and structural lines. While early twentieth-century composers *constructed* their pitch-class relations, jazz musicians *heard* them in improvisation—which suggests that pitch-class and nontonal relations can develop naturally out of musical practice in the same way that tonal music grew out of modal music and nineteenth-century tonality grew out of that of the eighteenth century.[21]

As we can see, the author expresses very ambitious and far-reaching hypotheses following his analyses. He was the first to establish the relation between the position of the analyst and that of the producer(s): if the music observed must be analyzed in this way, it means that it was constructed accordingly, i.e., it must reflect the processes used by improvisers. The notion of conscious intent previously mentioned comes back, though it seems the author did not want to get involved with that. According to Block, producers (improvisers) definitely use strategies whether they mean to do so or not and whether they do it consciously or not.

Block's second article, "'Bemsha Swing': The Transformation of a Bebop Classic to Free Jazz" (1997), deals with the issue of conscious intent with regard to a version of "Bemsha Swing" by its composer, Thelonious Monk: "For the purpose of determining the structure of Thelonious Monk's work, it is immaterial whether he 'heard' or was conscious of these connections. The fact is that as an artist he used these connections, perhaps, in part, as a result of recurrent finger patterns, and that they therefore do form the structure of his music."[22]

The issue is not important for Block: the product exists no matter what goes on in the process of making it, even if he contemplates the possibility of instrumental *topoi* ("digital patterns") and wonders whether strategies are carried

out consciously or not. In substance it is the same position as Henry Martin's about Charlie Parker. What about the listener then? "The real issue is not so much whether a listener can 'hear' an abstract connection or not but whether a listener can learn to hear such connections."[23] As one could have expected, the symmetry of situations between levels of reception on the listener's side and strategic processes on the producer's—all taking place with varying degrees of consciousness—is not addressed by the author, who prefers to question the listener's capacity to access deep levels.

A close look at Block's analyses raises other objections,[24] but these do not globally invalidate his method applied to jazz. I see it as a tool among others at the disposal of analysts, and Block must be given credit for that.

However, in my opinion this method must be handled carefully in several respects listed here:

There is no hierarchy between pitches in pitch-class sets. The particular value that some pitches are granted in a tonal, structural, or melodic context disappear. This fact has implications that analysts must take into account. They need to look carefully at the context their object of analysis is in, particularly if it involves tonality either in a strict or loose way.

If pitches are not fixed, the building of pitch-class sets may there prove difficult.

The building of pitch-class sets involves choices that affect the ways pitches are grouped and instruments picked.

Inversions are taken into account. This implies, for example, that no difference is made between C7 and CØ chords or between scales on Mixolydian and Aeolian modes. This may overlook some significant features.

The principle of equivalence, applied through the practice of inversion, results in evening out the material, which again may overlook some significant features related to instrumental or tonal *topoi*.

1.5 Style Analysis (Jan La Rue)

The analysis of style presented by Jan La Rue in his book *Guidelines for Style Analysis* published in 1970 is explicitly empirical: "The purpose of these *Guidelines* is to establish an effective general method. The specific application rests with each performer and listener."[25]

The way that Jan La Rue understands musical style and its analysis will not be discussed here. Let us simply highlight that he proposes a "general and effective method" based on a parametric analysis, with a peculiar aspect worth underlining: the author suggests that analysts start with a study of "SHMR" elements, i.e., sound (S), harmony (H), melody (M), and rhythm (R). The prime position of sound in this study is noteworthy, as it is not necessarily common in the analytical

tradition of art music. In this context, sound involves timbre, extent, range, leaps, special effects, use of idiom as a whole, texture, and dynamics. It is also worth noting that form is not looked at in this first analytical phase. It is observed in the second phase because it is seen as a resulting parameter (or "combining element"): form is identified by observing the four primary parameters. Also—and this is a crucial point—the concept of form as such actually disappears and is replaced by the concept of "growth," divided into "movement" and "shape," which is a much more dynamic approach. Form is considered in motion (which recalls a Schenkerian idea). Finally, the author suggests taking the verbal text into account when it is part of a work. So the whole analysis unfolds in three phases: 1. study of background (frame of reference); 2. observation (SHMR, growth, textual influence); 3. appraisal (process of completion of growth, balance between unity and variety, originality and imaginative wealth, external matters: novelty, popularity, timeliness, etc.).

Other important concepts appear, in particular the tridimensional nature of the analysis. It can operate at large, middle, or small dimensions. Each of these viewpoints gives a different perspective on a work. Also, the author particularly values the concept of "concinnity," which he describes as the highest degree of interconnection and correlation between elements.

In this analytical method, La Rue has no pretentions that he has designed a theory, as such. However, his method is based on rigorous grounds, in-depth questioning, and a long experience of analysis. Besides, it is easy to agree with the analytical approach that he favors: "The basic rule is one of attitude: do not pervert any observation or conclusion by elevating it to the level of dogma or Divine Truth. A proper analysis exposes its methods and its conclusions fully, ready for later researchers to make their own judgments and adopt the aspects that they find convincing or helpful."[26]

To the best of my knowledge, there is only one study of significant standing focusing on jazz works that was explicitly inspired by La Rue's principles: Steve Lajoie's study of the collaborative work between Miles Davis and Gil Evans, first as a PhD dissertation[27] and then as a published book.[28] The result of this systematic investigation of four pieces ("Blues for Pablo," "New Rhumba," "Bess, You Is My Woman Now," and "Will O' the Wisp") is remarkable.

Lajoie has produced his own transcriptions of the recordings available and researched the written traces of arrangements by Gil Evans with the help of the arranger's family. Whenever possible, he compared these traces with his own transcriptions after having completed them. So the transcriptions were purely based on his listening of the recordings and the existing written data was used for verification or modification afterward. The resulting score was then summarized and presented on three staves under which Steve Lajoie made a series of eight observations based on principles borrowed from La Rue.[29]

Such a method produces a lot of results, but it also shows a weakness: the author gives a methodical description of the four pieces selected but with no hypothesis at the start and without synthetizing the results at the end in order to propose a new vision of the work. This is very frustrating, especially as many interesting points are brought into light due to the systematic nature of the investigation. Consequently, the author perhaps falls into the trap that La Rue keeps warning inexperienced analysts about, that of too much data. Lajoie makes a selection in his data but does not subsequently organize it, and thus the information remains unsynthesized, lacking perspective and hierarchy.

The reader understands that my criticism toward the work of Steve Lajoie is about the way that he handles his results and what he makes of Jan La Rue's method. However, beyond this particular analysis, how useful for jazz analysis in general does this method appear? The example of Lajoie's work gives a clue. The works he chose to analyze are clearly very interesting in themselves and are rarely studied. However, I believe that there are additional reasons explaining why he chose them as an object of study. Indeed, from the point of view of music writing, the thirty-nine works arranged by Gil Evans and recorded by Miles Davis between 1957 and 1968 have a very special status in the jazz repertoire. These pieces are among "the most composed," which means that the largest part of the piece exists at the pre-performance stage. The contribution that the performance stage made to the whole is for the most part limited to Miles Davis's improvisations, but this was the main cause of the esthetic and public success of these works. Miles Davis improvised, indeed, but within an extremely precise and framed context. As a consequence, this music is not fit for reinterpretation.[30] It can only be played in one way: the one recorded by the creators.[31] As a result, this music makes up a restricted object equipped with abundant pre-performance material, and thus particularly suitable for an analysis in La Rue's style. The main difficulty an analyst faces when trying to apply this method to jazz relates to the importance of the pre-performance and performance stages. This problem is avoided here because the music chosen is very composed—which is a rare case in jazz—and a large part of the musical material (i.e., the arrangements and orchestration of Gil Evans) is analyzed at the pre-performance stage. The performance stage made—nearly exclusively—of Miles Davis's improvisations only represents a small part of the overall description, however crucial that part is in the substance of this music.

Nevertheless, the tools suggested by La Rue can be a great help for the specific analysis of jazz. The three different scopes (large, middle, and small dimensions) are theoretically as useful for jazz as they are for art music. The broad conception of rhythm—including various types such as harmonic rhythm, "textural" rhythm, surface rhythm, contour rhythm, etc.—are appropriate for jazz, too. The same applies to melodic features, in particular for close-up analysis of an improvised

line. But, of course, one must be able to apply these tools to the performance stage as well as the pre-performance stage, which Steve Lajoie did not demonstrate. In this respect, I find that La Rue's focus on sound is particularly interesting for the analysis of jazz.

La Rue's list of tools and notions has the great advantage of looking at parameters in relation to each other; such an analytical approach is even more fundamental in jazz analysis than in other areas.

1.6 Analytical Paths to Follow

Are there other analytical theories devised for art music that could apply to jazz? Two of them will be discussed in the remaining part of this chapter: Fred Lerdahl and Ray Jackendoff's generative theory of tonal music, and Nicolas Meeùs's theory of harmonic vectors.

1.6.1 A GENERATIVE THEORY OF TONAL MUSIC (LERDAHL AND JACKENDOFF)

Jazz is mentioned only twice in their book. It first occurs in a passage dealing with hierarchy between pitches, in which the authors explain that some pitches are structurally more important than others that are considered ornamental or derived from the former. This leads to the same implications as in Schenker's method: analysis must involve a process of reduction. Later, the authors discuss the case in which several sections derive from the same structure, as in a theme and variations form:

> More complex is the situation where two or more passages are both heard as elaborations of an abstract structure that is never overtly stated. Bach's *Goldberg* Variations is a particularly magnificent example of this kind of organization. Why is the listener able to recognize, beneath the seemingly infinite variety of its musical surface, that the aria and 30 variations are all variations of one another? Why do they not sound like 31 separate pieces? it is because the listener relates them, more or less unconsciously in the process of listening, to an abstract, simplified structure common to them all.
>
> Such relationships are needed not just for the analysis of written-out music. In any musical tradition that involves improvisation on a given subject (such as jazz or raga), the performer must actively employ knowledge of principles of ornamentation and variation to produce a coherent improvisation.[32]

A first thing to note is the different angle of approach the authors choose depending on whether they are dealing with music from a composed tradition

or practices making use of improvisation: the capacity to relate a surface to an underlying structure is approached from the point of view of perception in the first case and that of production in the second. In my opinion, this implies that the relation is evident in the composition process (perhaps it is even at the heart of the process) and, if it is not as clear in the case of improvised music, it nonetheless exists. On these grounds, Lerdahl and Jackendoff assimilate the jazz practice of improvisation on a form consisting of head with a theme and variations, which is not by any means obvious, but this is not overly important.

It does not look like this theory has been applied to jazz much. One example by Stephanie Sin-yun Shih focuses on text in a corpus of songs by Ella Fitzgerald.[33] The author faces difficulties in applying the rhythmic rules of the theory, in particular rule 2 of "metrical well-formedness," as well as the "continuous column constraint" which states that any beat on a given level must correspond to a beat on all inferior levels. The very high frequency of accents on the eighth note occurring before the first beat (i.e., on the upbeat) in the corpus of Ella Fitzgerald's songs contradicts the rule just mentioned above (but the same is true in numerous other cases, as this is often found in common practice jazz and may even be a feature of it). Indeed, this frequency makes the eighth note a "strong beat" that, according to the rule, should be found at all inferior levels (for example, in the pulse expressed by the bass and drums), which is not the case. But let us not forget what Ian Bent reminds us of: like Chomsky's grammar, it is a "mentalist" system, focusing on mental processes and not a final product.[34]

It has not been demonstrated that it is impossible or fruitless to apply this theory to jazz; but there are issues with it, which may explain the lack of attempts to date.

1.6.2 HARMONIC VECTORS

The theory of harmonic vectors was proposed by Nicolas Meeùs at the beginning of the twenty-first century.

> This theory postulates . . . that harmony is precisely based on the succession of chords rather than on a value that each of them may have in isolation. The function of a chord is determined by the way that it came to appear and the way that it was left rather than the degree of the scale on which it is built or its distance from the tonic. The key is determined by the signification that can be given to the chord progression rather than the function that each of the chords may be identified with.[35]

This is a theory neither of functions nor degrees; it is a theory of fundamental progressions. The progression of chord roots is thus examined and no assumption is made about functions or distances to a tonic. Concretely, there is no need

to identify a key as a first step in a harmonic analysis. Intermediary situations between tonality and atonality constitute the most suitable corpus for this theory. The Schenkerian theory, for example, is very well suited to the analysis of strictly tonal pieces, and the set-theory is well adapted to repertoires that have nothing to do with tonality, but both are more problematic in these intermediary situations. The theory based on vectors offers an opportunity to solve these problems. I do not think that it has yet been applied to jazz, but it could prove very helpful, as a great part of the jazz repertoire does not fully engage with tonality. The premise of the theory lies in the observation that there are six possible progressions of the roots within a diatonic scale. The author starts from the classification proposed by Arnold Schoenberg in *Structural Functions of Harmony* and bases the first two progressions of the first category on the presence of the root of one of the two chords in the harmonic series of the other:

Ascending fourth and descending third
Descending fourth and ascending third
Ascending second and descending second

"The first category of progressions is very common in tonal music whereas the second category hardly occurs. . . . In tonal music, still, [the ascending second progression of category 3] is frequent whereas the [descending second progression] is extremely rare."[36]

Meeùs then suggests associating the ascending second progression with the first category and the descending second progression with the second one, which leads to two groups:

Ascending fourth, descending third, ascending second;
Descending fourth, ascending third, descending second.

What are these groupings based on? Meeùs traces the theory of substitutions, discussing the hypotheses of Jean-Philippe Rameau, Simon Sechter, and Hugo Riemann in particular. For example, he puts forward that "Riemann's theory of substitutions merely describes the similarity that links together the chords that are a third away from each other. . . . This link between them is probably due to common notes in both chords."[37]

The theory cannot be described in detail here. I shall merely express the same thing in the terms that have been used earlier about what has been called the diatonic substitution,[38] according to which it is possible, in a tonal context, to replace a chord by the one located two degrees further up or two degrees further down. This way, a V-I progression may be replaced by V-iii or V-vi, that is to say by progressions of an ascending fourth, descending third, or ascending second.

In the same way: I-IV may be replaced by I-vi or I-ii, i.e., progressions of a descending fourth, ascending third, descending second.

The groups articulated by Nicolas Meeùs above are easily found here, which is not surprising.

In the theory the first type of progression is called *dominant vector* (DV, progression at work in the circle of fifths); the second *subdominant vector* (SDV, as in the plagal progression).

Despite being of different kinds, the first applications of harmonic vectors reveal a great stability of vectorial proportions depending on styles and composers. Bertrand Desbords carried out a comprehensive study of the recitatives in Mozart's operas and found that the proportion of dominant vectors was 89 percent. On the basis of a small body of Bach's chorals, Dmitri Tymosczko estimates that three-quarters of Bach's vectors are dominant and a quarter are subdominant. These examples show that the tonal language uses vectorial progressions in an asymmetrical but identical manner and with a proportion of dominant vectors representing between 70 and 90 percent of the whole.[39]

Conversely, pre-tonal and post-tonal musics reveal significantly lower rates of dominant vectors. The proportion of dominant vectors could thus help us measure the degree of tonality of a piece. The theory, however, is not limited to calculations of percentages. It is in constant progress, particularly through applications to more and more diverse repertoires, among them pop music through a study on the Beatles.[40] Its application to jazz would certainly need to be careful, but the very nature of jazz harmony makes it look promising.

2. NATIVE METHODS

We say methods rather than theories because I believe that no analytical theory specific to jazz has been proposed. Yet, empirical analyses have been carried out on aspects specific to jazz, and these analyses would be unlikely to be inspired by models designed for classical music or other types of music. We shall focus first on interactional and then comparative analysis.

2.1 Interactional Analysis

The analysis of interaction is a vital aspect of jazz analysis, as with other types of improvised music. It consists of trying to understand how musicians mutually react to the musical suggestions made in the course of collective playing. It thus focuses only on the performance stage, or at least on its actual manifestation (for its production does not come from nowhere, which is also true of all the other phenomena occurring during the performance). Again, it appears necessary

to use parameters. Interactional analysis is sometimes part of the analysis of improvised solos, which has to take the interactional dimension into account, especially the relation to the rhythm section (providing we are not in the case of a solo performance, of course). However, this method goes further and is involved in non-improvised parts too, including the way that musicians play a rhythm or written melodic parts together (for example, in big band sections).

Interaction is one of the subjects in jazz that generates the most interest. It seems to me that there are two main approaches, which are in no way incompatible with each other. One of them focuses on the purely musical manifestations of interaction, which amounts to focusing on the performance stage. This is the choice made by Todd Coolman[41] and Robert Hodson.[42]

The second option prefers to focus on relational and cultural aspects of musicians playing together. This is the choice made by Ingrid Monson, in particular:

> How musicians go about saying something in music and about music—as well as in music and about identity, politics, and race—involves interaction at several analytical levels: (1) the creation of music through the improvisational interaction of sounds; (2) the interactive shaping of social networks and communities that accompany musical participation; and (3) the development of culturally variable meanings and ideologies that inform the interpretation of jazz in American society. This book develops an ethnomusicological perspective of jazz improvisation centered on interaction in this multiple sense. Stressed here are the reciprocal and multi-layered relationships among sound, social settings, and cultural politics that effect the meaning of jazz improvisation in twentieth-century American cultural life.[43]

She also points out the difficulties encountered when trying to take simultaneously into account musical and social dimensions of music.[44] Paul Berliner's comprehensive survey, *Thinking in jazz*, tries in part to find a way to reconcile these two dimensions, even if the genesis of improvisation is his main focus of interest, rather than interaction.

The "Chicago school" of thought is where "interactionism" developed, and so it is perhaps more than coincidental that Berliner's and Monson's books were published in Chicago. Howard Becker, one of its prominent representatives, has also published a study on deviance and jazz musicians.[45] Berliner and Monson hardly ever quote Becker in their books, but it seems to me that their works bear some relation to this Chicago-based tradition that highlights the importance of social relations between the protagonists. However, despite this focus their studies also include a lot of analyses of both fragments and whole works of jazz.

With regard to systematic interactional analysis in the strictly musical sense, I believe that the PhD thesis of double bass player Todd Coolman in 1997 can be

seen as a model. He carried out a minute analysis of interplay in Miles Davis's "second quintet" on the basis of comprehensive transcriptions of four recordings. His approach shows through clearly in his description of the results of his micro-analysis of two of the four pieces:

> "Masqualero" revealed yet another facet of this ensemble's music-making ability. It was the adaptability of each player that enabled the performance to constantly expand and contract the form of the original composition. Various motivic cues were utilized by each member of the ensemble at various times to delineate formal alterations. So immediate was the responsiveness of the group, that the listener would not detect the subtle changes taking place. In this way, the group discovered a method of playing that allowed freedom but at the same time held onto enough structural elements so as to create a sense of balance.
>
> In the analysis of "Stella by Starlight" I discovered that through careful attention to texture, rhythm, harmony, and a highly developed reflexive interplay (call and response) on the part of each musician, the moment to moment musical events fit together in a global sense and created a sophisticated piece of music possessing great formal unity.[46]

Todd Coolman's study (the quality of which, I believe, has not often been matched) shows emphatically that this type of work on very detailed transcriptions is time consuming but worthwhile.

2.2 Comparative Analysis

This commonly practiced form of musical analysis would appear to be particularly well suited to the nature of jazz, but this does not seem to be reflected in publications. How did different musicians (potentially at different periods in time) deal with the same composition? It is clearly informative, especially for the understanding of styles, and can be carried out on one or several parameters. As for harmony, it approaches issues relating to hierarchy in a particular way (mostly in tonal contexts, of course). Chords that are identical at certain points in all the different versions are likely to be of prime importance structurally. In the same way, chords that are substituted in various ways reveal moments of a harmonic progression that are structurally weaker. Harmonic models can be deduced as a result and then put in perspective in relation to their time and style.[47] Similar comparisons can be carried out about other parameters, of course. Looking at the different versions that have stemmed from a composition can be a good way to deepen one's understanding of it.

This inventory of analytical methods is not comprehensive and there are other options to suggest for further investigation in the future.

2.3 Directions for Future Analysis

2.3.1 ANALYZING CODES OF PLAY

Such an analysis focuses on describing codes of play (as they have been defined in chapter 3) and the way that they are enacted by musicians. It has not been done as such before, not least because the notion had not been identified and labeled until now. However, it is clear that many analyses have touched on it. It seems to me that systematic surveys on such codes could prove fruitful, especially in analyzing the performance stage. Scrutinizing codes in a differentiated manner—codes of play decided on at the pre-performance stage, the way that they are actually applied at the performance stage, and those that may be discovered and initiated by performers during the performance—may help draw a picture of the playing styles that other methods may not have revealed.

2.3.2 ANALYZING THE WAY THAT A COMPOSITION IS TREATED

Many analyses include the study of the text as it is fixed at the pre-performance stage, the composition in particular. It focuses on pointing out structural differences as well as harmonic and rhythmic modifications. However, this is usually a preliminary study prior to the investigation of the main object to be analyzed. Occasionally, the way that the composition has been treated may become the main object of an analysis. This is the case when analyzing the specific style of an arranger, for example. Cases of adaptations of classical scores come to mind: Tchaikovsky's *Nutcracker* and Grieg's *Peer Gynt* by Duke Ellington; Yradier's *La Paloma* and Mussorgsky's *Arab Dance* by Gil Evans for Claude Thornhill's orchestra; the famous arrangements of Gershwin's *Porgy & Bess*, Rodrigo's *Concierto de Aranjuez*, and Kurt Weill's songs ("My Ship," "Bilbao Song," "The Barbara Song"), all by Gil Evans. In all cases, all parameters are involved. The purpose of this kind of analysis is to observe how the choices made by arrangers on the material of the composition reflect their own personal style.

3. TOOLS

Some tools have proved very useful whatever method of analysis is chosen. Here are some of them.

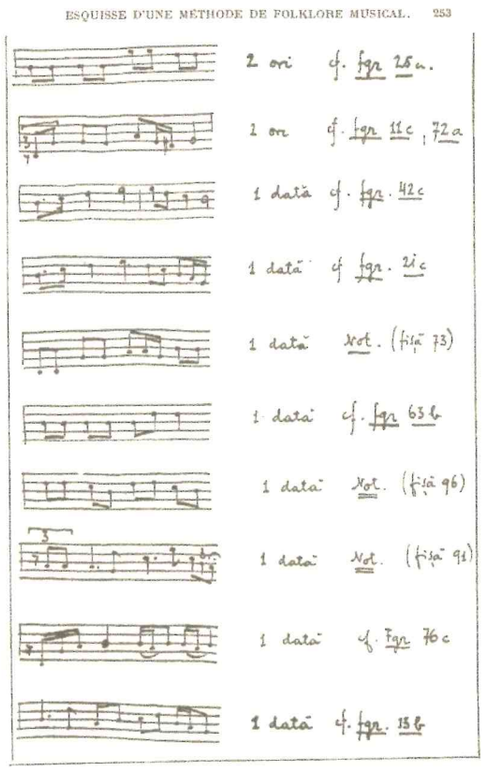

Fig. 13.1. Superimposed Presentation C. Brăiloiu (Brăiloiu 1931, 253)

3.1 Superimposed Presentation

The Romanian ethnomusicologist Constantin Brăiloiu (1893–1958) was probably the first to insist on the fact that there is no single reference version of a popular song identified by a title. Indeed, each recorded new performance shows significant differences from the prior versions (textual, rhythmic, or melodic modifications, additions, omissions, or interpolations). Following Bartók's footsteps, Brăiloiu called this phenomenon *Variationstrieb* and we owe the method for studying it to him; it consists of superimposing the various versions of the same song but only writing up the new elements.[48]

The presentation shown in figure 13.1 can be suitable for jazz. It is useful to study the variations of a tune. In a head in AABA form, for example, the melody in A is presented three times. The superimposition of the transcription of the three occurrences shows clearly the elements that remain unchanged (and may thus be considered necessary) and the variations, as well as the degree to which they could potentially vary.[49] The transcription by Roger Pryor Dodge of several takes of "Black and Tan Fantasy," reproduced in figure 10.2 (p. 217), is a good example of this.

3.2 Paradigmatic Analysis

This method, created by Nicolas Ruwet, consists of comparing identical or similar melodic segments using a vertical presentation:

> When studying monodies it has seemed informative to me to use a method that Claude Lévi-Strauss has applied to the analysis of myths (an idea that he got from the musical notation of orchestral scores). If possible, equivalent sequences are written one below the other in a single column and the text must be read from left to right and from top to bottom ignoring the blanks. Some structural features—as well as some ambiguities—immediately appear as a result.[50]

This method displays comparable elements as well as melodic similarities or identities. I have used this method myself on the composition of "Fables of Faubus" for a commentary of the versions analyzed by Denis-Constant Martin and Didier Levallet. The results recalled the motivic analysis of an improvised solo, but in my case the method was applied to a fixed text. Equally, this tool could be used in the context of a harmonic analysis.

3.3 Comparison of Takes

Comparing takes made during a specific recording session can be very revealing. The way that the recording industry has developed has made this possible. Alternate takes have appeared with new editions of recordings by prominent musicians on albums. Occasionally, the juxtaposition of different editions could reveal that the newly published take was not (or not exactly) the same as the originally released version. "Springsville" on the album *Miles Ahead* by Miles Davis and Gil Evans is an example of this. The comparison of successive editions of the album shows slightly differing versions with some solo passages overdubbed with those recorded in different takes. Alternate takes, but also fragments of takes, false starts, rehearsals, and studio conversations started to spread when CDs and editions of complete works came along. The comparison of these different takes makes it possible to isolate some features that otherwise would have been impossible to pin down. The most emphatic example of this is given by the two takes of "Koko" recorded by Charlie Parker and Dizzy Gillespie November 26, 1945 (the second take being the originally released master). The first, interrupted

take reveals two important things: first, Gillespie's break is not improvised, as it is played in exactly the same way the second time; second, Parker intended to record "Cherokee," the head of which he started to play before stopping the take. Based on this information, one can presume that the first thirty-two bars had been conceived as an introduction and that they subsequently became the head (though it is not repeated at the end) following the removal of the exposition of "Cherokee."

Generally, successive takes often offer a document on the working style of musicians as well as insight into the progress of the work during the recording process. The various solos overdubbed by Miles Davis on "Springsville" show that he often started these solos with the same notes, which he used as a basis. When there are many takes, tiredness and possible tensions—which can have an impact—can also become palpable. In the context of this journey, we listen to the final take in a very different way, which is probably closer to the perception the musicians themselves experienced. Listening to the seven takes of "I Get a Kick out of You" recorded March 31, 1953, by Charlie Parker is very enlightening in this respect.

3.4 Counting

Counting is the basis of statistical methods. The idea behind them is usually to unveil stylistic features that can be seen in the statistics. Most studies using this method deal with pitch or pitch relations. A few examples suffice to show what can be achieved in this way.

Keith Winter's informational analysis mentioned earlier (pp. 276–78) is largely based on statistical counting and a specification of the notes in the solo analyzed.[51] Pitches may also be counted in relation to the tonic of the moment rather than in absolute value (i.e., identifying and counting degrees). The degrees that Ken Rattenbury, for example, deals with have a special status as he tries to establish the frequency of blue notes in five pieces recorded by Duke Ellington between 1939 and 1941.[52] Rattenbury draws some remarks on blue notes and types of syncopation from the statistics he had obtained. Statistics can then be observed in relation to each other to try and establish correspondences of stylistic features.

Statistics can apply to groups of notes, motives for example. Thomas Owens's whole argument about Charlie Parker's style is based on statistics drawn from an extremely large corpus. He first identifies 97 motives and then counts them in 190 solos. He puts them in two groups based on their frequency: those that appear over a hundred times and those that appear between fifty and a hundred times. He then organizes those left over (that appear less than fifty times) according to the degrees on which they appear.

One may also decide to observe certain pitch relations. The frequency of intervals in a musician's playing can be an interesting piece of information. Ludovic Florin has counted the intervals used in 107 specific compositions by John Coltrane,[53] using the "Monika" software, which calculates intervals between the consecutive notes of a melody.

In the first phase of his study, he counted ascending and descending intervals. Merging the two types of intervals, he obtained a second table that showed that 78 percent of the intervals used were seconds or thirds and that large intervals (larger than a perfect fifth) were very rare, with none scoring more than 2 percent and cumulatively remaining under 7 percent.

The software could also measure pairs of successive intervals. It reveals that Coltrane used the "descending half-tone followed by another descending half-tone" formula twenty-nine times. The table shows that moving up by an ascending major second followed by a descending major second and back up by an ascending major second is by far the most common journey. It also shows very clearly that successions of large intervals are very rare (the "descending fourth-ascending fifth" sequence being the least rare). The final tables eventually highlighted that the percentage of perfect fourths and fifths went up in the compositions of the final two years.

The "Monika" software has been developed since and turned into a newer version called "Charles."[54] This new software has been conceived as an extension of the theory of harmonic vectors.[55] Its main function is to calculate the percentages of dominant and subdominant vectors as well as pairs of vectors.

3.5 Technology

"Monika" and "Charles" are two examples of software designed to help analysis. Software of sound treatment offers the possibility of repeating a fragment constantly or slowing it down while altering neither the pitches nor the sound quality, which makes the transcription process a lot easier. They can also be very helpful in the analysis of complex rhythmic phenomena, especially in very fast tempos. They can also be used in more general studies. André Hodeir managed a research program dedicated to jazz at IRCAM[56] between 1978 and 1986, describing it thusly:

> The indefinable rhythmic thrill that is specific to jazz and which has been called "swing" is fuelled by melodic articulation more than by any quality of the pulse (which, in jazz, is the means by which the primal information—the tempo—is concretely realized in an objective way). . . . We were convinced . . . that the phenomenon existed objectively so it seemed rational to us to turn to the means offered by modern technology to reveal the laws

of that phenomenon. We used computers and joined the small number of academics who, in America and elsewhere, work on articulation (our research taking part in a more general study of musical articulation).[57]

Software that allows the visualization of sound may also be used. The Groupe de Recherches Musicales has developed the acousmograph, "a software designed for the listening and visual representation of music. It helps with mapping, annotating and describing any type of music or any sound document thoroughly. Using sound signals, its functions allow the creation of presentations designed for the purpose of teaching non written musics."[58] In his analytical presentations of works by Miles Davis and Gil Evans (inspired by Jan La Rue's analysis of style),[59] Steve Lajoie systematically utilized the stereo graph from the Pro Tools software, which helps the reader visualize intensity variations. Other software like Sonic Visualiser (music audio file analysis), iAnalyse (computer-assisted analysis), or Praat (phonology) can be of great help.

3.6 Vincenzo Caporaletti's "Audiotactile Principle" and the "Theory of Audiotactile Formativity"

The theory of Italian musicologist Vincenzo Caporaletti originates in the statement that certain musics—mainly jazz—prove difficult to analyze using the usual conceptual pairs such as written versus improvised or written versus oral, which are not adequate to describe the cognitive dimension of these musics. Therefore, in his book *La definizione dello swing*,[60] Caporaletti brings the notion of Audiotactile Principle (*Processo audiotattile*). Correlatively, he suggests to call musics the practice of which is based on that principle "audiotactile musics" (*musiche audiotattili*), which should thus be analyzed in a specific way.

Before addressing the definition of that principle, let us note that Caporaletti stresses the importance of the medium as defined by Marshall McLuhan, especially it its formative and performative dimensions, which are radically different in written and audiotactile musics. The latter involve a "psycho-corporeal formativity":

> On the one hand there is the typographic page ("where speech is trapped by space" [Roland Barthes]), which comes with its own epistemic approach and leads the presumptions associated with linear and phonetic ways of writing to drastic consequences as uniform iteration and a number of other principles increase: the segmentation of experience into discrete units, qualitative homogenization, serial succession, and the prominence of sight over the other senses. On the other hand, there is the polymorphic and enticing atmosphere resulting from the technological applications of electricity; it is also polycentric and penetrating; the senses of touch and hearing become pre-eminent again.[61]

In a way, the author sums up his concept with this statement: "Beside the structural archetype of Sender—Message—Receiver, on which the semiological triad of the Poietic—Neutral—Esthesic levels [Molino-Nattiez] is based, it would be wise to consider the fourth pragmatic element of communication: the conditioning role of the Medium." Starting from that point, Caporaletti then comes to a definition of the Audiotactile Principle conceived as a medium made of the performer's sensorimotor system, which "is responsible for a physicogestural modulation of sound/musical energies, and the action of which is crucial in the structuring of the musical text. Aesthetically, this marks the appearance of the bodily aptitude—which operates outside of text—in the traditional domination of Form."[62]

As a consequence, at the levels of conception as well as performance and transmission, a lot of traditional or African American musics involve cognitive and bodily resources (for example, in the imitation or reproduction of performed musics—heard either live or through recordings) that are fundamentally different from those involved in written musics, which favor the visual approach through the score. Learning a tune by listening to a record or by deciphering a score, learning an idiom by listening to the masters or by studying their scores, playing ten minutes in trio from a thirty-two bar melody supported by a figured harmonization, or conducting a symphony movement are different activities not only in their modalities but also in what founds their practice.

Though Caporaletti puts the Speaker—Message—Listener and Poietic—Neutral—Esthesic chains into perspective by adding the medium's performativity, he also puts this addition itself into perspective. Indeed, the "crucial part played by the cognitive and interactional factuality that develops between the sensorimotor system of the performer and the realm of the global form of sound"—which does not appear in the semiological triad even with the addition of a fourth element (medium)—must be taken into account first. This mechanism is activated in very different ways in audiotactile and art musics." In other words, the main difference between audiotactile musics and written Western art music is not so much that learning, memorizing, and the production of music happen mainly through live or recorded music instead of score reading. It is rather the whole relation to music involved by two fundamentally different cognitive modes.

It is worth noting that audiotactile musics are ontologically bound to phonography, which is not the case of the so-called oral "traditional" musics that are not supposed to be recorded (even if, of course, it can happen). This leads Caporaletti to suggest the concept of Neo-Auratic Encoding present in audiotactile musics and not, supposedly, in folk musics. For example, audiotactile musics

may involve musical notation (in compositions or arrangements). They are also fixed by phonographic means; and finally, they share some features and practices with Eastern high art musics (China, India, etc.) as well as with contemporary art music. None of these can be assimilated to oral culture.

Audiotactile performativity is, as far as I know, the first proper theory as such, for it suggests concepts and articulates them as a consistent whole leading toward a global vision. It offers organized answers to questions formerly formulated in the pairs by Charles Keil[63] (*Embodied meaning–Engendered feeling*), George Lewis (*Eurological–Afrological*),[64] the argument about process and product,[65] or myself in this book with the issue related to the phonographic system.[66]

Finally, let us note that it is not exactly an analytical method. Rather, the scope brought by the theory on the jazz work (and *de facto* on its analysis) deeply transforms the analytical approach. This may be appreciated in analyses published by Vincenzo Caporaletti of works by Thelonious Monk (2002a), Charles Mingus (2002b), Charlie Parker (2006a, 2007), Stéphane Grappelli (2006b), Eddie Lang (2008), Jelly Roll Morton (2011), or John McLaughlin (2013), for example. The best introduction to that theory is found in Caporaletti (2018) and related analyses in Cugny (2018) and Araújo Costa (2018).

CHAPTER 14

Interpretations

1. PRELIMINARIES

The various procedures presented in the previous chapters offer a range of specialized options for the analysis of specific works. The results of analyses do not have much value in themselves until they are interpreted and analysts make sense of them. This occurs in a post-analysis stage that echoes the pre-analysis stage (when hypotheses are formed unless this step is either deliberately or unconsciously ignored). What can we make of conclusions? Do they confirm, invalidate, or transform hypotheses? Do they reveal that problems were initially misconstrued? Do they suggest new hypotheses that take us back to the start of the process, i.e., do the results produce conclusions or hypotheses again?

I believe that it is possible for an analysis to reveal its own hypotheses in the course of the analytical process, even if it is clear that analysts never start the process without some predetermined ideas on their object. Afterward, the way that an analysis is presented and the process reconstructed for the sake of the readers is another issue. In my opinion, it is unlikely that analysis could only validate or invalidate hypotheses. I believe that the dynamics of the analytical process itself can modify hypotheses or produce new ones. For that reason, I prefer to talk of consequences rather than hypotheses or conclusions. By that term I mean a process of generalization based on the analytical material produced during a journey of discovery, so not necessarily a sheer process of verification/validation. Eventually, whether such a generalization is presented as a validation of hypotheses made in the pre-analytical stage or as a deduction carried out in the post-analytical stage is unimportant. The generalization must be as well argued as possible, based on analytical evidence produced in the most rigorous way possible, and presented in a manner that makes the link between the two—and the validity of that link—clearly visible.

The status of the environment that a work appears in needs to be discussed. An environment is composed of two sorts of determining factors: nonmusical